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Issued July 20, 1921.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

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INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JULY 1
TO SEPTEMBER 30, 1916.

(No. 48; Nos. 43013 to 43390.)



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1916 (NO. 48; NOS. 43013 TO 43390).

INTRODUCTORY STATEMENT.

This inventory represents a period of great unrest and lists but few introductions by agricultural explorers who were in foreign countries. It covers a period when shipping facilities were more unsettled than they had been at any time from the outbreak of the war up to the time of America's entrance into it. In consequence it is one of the smallest inventories that have been issued for years.

Notwithstanding these handicaps, some important introductions are described in it; and these it may be well to emphasize.

The growing realization among manufacturers of the importance of the discovery of the hydrogenation of vegetable oils is rapidly putting the palm oils, nut oils, and all other oils in quite a new category. As one chemist has expressed it: "Since these discoveries, which have made it possible to transmute, so to speak, vegetable oils into all sorts of substances useful to man, the oil industries are coming to be understood as of greater importance to the human race than the great steel and iron industries."

It is therefore from this new point of view of the importance of vegetable oils that the successful cultivation of the Brazil nut (No. 43114) in Ceylon and the Straits Settlements is worth recording and action upon the problem of its forest planting in Porto Rico urged. The Java almond, *Canarium indicum* (No. 43024), not only one of the stateliest avenue trees in Java, but also a tree yielding an abundance of large-kerneled nuts, the oil from which has been successfully used by the Dutch in emulsions as an infant food, is worthy of study. The soft lumbang of the Philippines, *Aleurites trisperma* (No. 43389), which yields a quicker drying oil than the true lumbang, *A. moluccana*, may prove adapted to culture in Porto Rico or Cuba; and its introduction brings up the whole question of the hybridization of the various species of *Aleurites*, the members of

which genus yield such closely allied but specific products. There are no records of any work of selection or hybridization having yet been done with these rapid-growing trees. The remarkable results which have been obtained by physicians in the treatment of leprosy with chaulmoogra oil and the isolation of the effective principle of this oil by Dr. Power have made it seem important to introduce and acclimatize in our tropical possessions the invaluable tree, *Hydnocarpus kurzii* (No. 43227). Whether the amounts of oil yielded by the fevillea (No. 43213), a forest climber of Jamaica, will warrant its cultivation is a question.

Useful hardy palms are so few in number that the testing out of two little-known ones from Argentina, by Dr. H. Nehrling, at his remarkable place at Gotha, Fla., is a matter of particular interest. These palms would seem to be adapted to a wide range of territory throughout northern Florida, since they were quite uninjured by the freeze of February, 1917, when the temperature went down to 20° F. One of them, *Butia bonneti* (No. 43116), bears edible fruits the size of a plum, having an apricot flavor and being intensely fragrant and very juicy. They are orange-yellow with a red cheek, and a single bunch borne by one of Dr. Nehrling's trees comprised 980 fruits. The other species, *Butia capitata pulposa* (No. 43238), is quite as hardy, and bore fruit clusters of a thousand edible fruits weighing 50 pounds. Both are suited to the high pine lands of Florida, where economic plants are particularly needed.

From Italian Somaliland the yeheb nut, *Cordeauxia edulis* (No. 43260), has been again introduced. The fact that it contains about 12 per cent of albuminoids, 11 per cent of oil, 25 per cent of sugars, and 37 per cent of other carbohydrates and that it is said to be preferred to rice and dates by the inhabitants should entitle it to especial consideration in the southwestern arid regions. The degree of cold that it will stand is a factor to be determined.

Of forage plants recently introduced, few have come to us with so high a recommendation as *Pennisetum purpureum* (No. 43241), the gift of Mr. B. Harrison, of Burringbar, New South Wales. In dry seasons, plants under observation in Australia made a growth of 11 feet. The plant is succulent, greatly relished by stock, richer than green maize, and remains green even during six or eight months of drought when other plants are dried up. It is a perennial, yields 27 tons per acre, and is, altogether, considered to be an ideal forage crop for arid regions.

The Spanish garbanzo (*Cicer arietinum*), although grown now to a limited extent in California, is not given the consideration that it deserves when it is recollected that it is the staple food of the poorer classes in Spain and is grown in large quantities in Mexico and shipped

to Spain by thousands of tons. A collection from Seville should awaken new interest in this dry-region legume (Nos. 43273 to 43280).

It would seem reasonable that the *Buchanania* (No. 43038), from the dry forests of Burma and India, which is leafless for a period and which ascends to an altitude of 3,000 feet, might be adapted to Florida and that its pellucid gum and varnish, as well as its oily kernels, which are said to resemble in flavor something between the almond and the pistache and to be much prized as a sweetmeat, may become articles of importance, much as the products of the pistache, to which it is related, are beginning to be in California.

A large collection of fruit varieties, mostly of New Zealand origin and comprising some selections and hybrids made by W. E. Lippiatt, J. F. Smith, and H. E. Sharp, is already making a good showing in the trial nurseries at Chico, Calif.; and American horticulturists will be interested to learn whether any of them prove especially adapted to American conditions (Nos. 43124 to 43186).

Twenty years ago Prof. Hansen obtained for the Bureau of Plant Industry some seed of a Russian sweet corn called the Malakoff. This variety appears in the Canadian gardens under the name Early Malcolm and has even been crossed with the Early Adams, producing a new variety called Early Ottawa. These seem to be the only varieties which are early enough to mature properly in the region around Ottawa, Canada, and therefore deserve to be better known in northern regions with similar short seasons (Nos. 43117 and 43118).

The breeders in the northern tier of States who are engaged in the production of hardier raspberries will take a particular interest in the selections of *Rubus strigosus* which were made by Mr. M. J. Dorsey, of the University of Minnesota. Mr. Dorsey was sent as an explorer to the Riding Mountains and Lake Winnipeg, where he found wild forms of especial promise for breeding and selection purposes (Nos. 43195 to 43201).

The botanical determinations of these introductions have been made and the nomenclature revised by Mr. H. C. Skeels and the descriptive and botanical notes arranged by Mr. G. P. Van Eseltine, who has also had general supervision of this inventory, as of all the publications of this office. The manuscript of this inventory has been prepared by Mrs. Ethel H. Kelley.

DAVID FAIRCHILD,

Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,

Washington, D. C., September 10, 1919.

INVENTORY.¹

43013. CACARA PALMATILOBA (Moc. and Sesse) Kuntze. Fabaceæ. **Yam bean.**
(*Pachyrhizus palmatilobus* Benth. and Hook.)

From Zacuapam, Huatusco, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received July 6, 1919.

A climbing herb with a twining stem, bearing large tuberous roots. The palmate leaves are somewhat hairy, and the purplish flowers occur in long racemes. The large turgid pod is deeply depressed between the seeds. This plant is found in tropical America and is cultivated for its edible tuberous roots, although it is not so commonly cultivated as the other species of this genus. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, pp. 2425 and 2426.)

43014. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Cuzco, Peru. Presented by Mr. A. A. Giesecke, rector of the University of Cuzco. Received July 6, 1916.

"I trust you will find these seeds interesting. They were collected after the season was nearly over and are not necessarily the best varieties." (*Giesecke*.)

43015. PAEONIA BROWNII × **ALBIFLORA.** Ranunculaceæ. **Hybrid peony.**

From Los Angeles, Calif. Presented by Mr. P. D. Barnhart. Received July 11, 1916.

"Seeds of our native *Paeonia* which are the products of flowers that I pollinated with pollen of the Chinese type, such as you grow in the East. I got the material from the Henry A. Dreer people last year. They collected it from white varieties in their field. I hope to get a cross that will bear large flowers and plants that are adapted to this climate. Our hills are covered with them, but the flowers are small and inconspicuous, though they begin to bloom, and profusely too, in early February and continue into March. This year the first flowers appeared in January, and those that I worked failed to set seed. I used heavy paper sacks to protect the subjects from the rain and insects." (*Barnhart*.)

It remains to be seen whether these seeds will produce hybrid plants.

¹ Each introduction consists of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the designations appearing in this inventory will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

43016 to 43019. GOSSYPIUM HIRSUTUM L. Malvaceæ. Cotton.

From Camaguey, Cuba. Presented by Mr. Robert L. Luáces, director, Granja Escuela Gaspar Betancourt Cisneros. Received July 10, 1916.

"Bolls from plants grown by Mr. Minor at Bartle, Cuba." (Luáces.)

43016. No. 1.

43018. No. 3.

43017. No. 2.

43019. No. 4.

43020. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.

(*Prunus persica* Stokes.)

From Sorrento, Fla. Scions presented by Mr. Victor Lent. Received July 10, 1916.

Lent Golden. "The original seedling tree of this peach grew on the Levi Risinger place here at Sorrento. The tree originated about 1902. I can say nothing of the parentage of the tree. It has been dead for several years now, and no trees were budded from it except the ones which I now have. I have been raising this variety now for almost eight years; other yellow peaches do very poorly here. This year they ripened earlier than usual. I picked the first ripe fruit May 29 and the last on July 4. Last year none were ripe until June 30, and the last were picked on July 24." (*Lent.*)

43021 and 43022.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Numbered July 7, 1916. Quoted notes by Mr. Meyer.

43021. CLERODENDRUM CYRTOPHYLLUM Turcz. Verbenaceæ.

"(No. 2319a. Mokanshan, Chekiang, China, August 6, 1915.) A spreading shrub, from 2 to 5 feet high, sending up many stalks; found on debris on mountain slopes at altitudes of 1,200 to 2,000 feet. Leaves glabrous, opposite, light green, of somewhat fetid odor; flowers small, white, but with large bracts of rosy color; berries blue. Ornamental but somewhat weedy. Of use for large parks and estates in mild climates as a cover shrub for sandy and waste places."

43022. IRIS sp. Iridaceæ.

Iris.

"(No. 2320a. Mokanshan, Chekiang, China, August 6, 1915.) An iris, forming big clumps, found in a garden, but said to occur wild in mountain ravines. Flowers reputed to be purplish."

43023. OSTERDAMIA MATRELLA (L.) Kuntze. Poaceæ. Grass.

(*Zoysia pungens* Willd.)

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received July 10, 1916.

Var. *Korai*. A creeping grass, important for binding coast sands, which does well on alkali soils and also as a lawn grass. Said to be relished by stock.

43024. CANARIUM INDICUM Stickm. Balsameaceæ. Java almond.

(*Canarium commune* L.)

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Gardens. Received July 10, 1916.

"Java almond. A large, handsome Malayan tree, characterized by a remarkable buttressed trunk and laterally compressed aerial basal roots; the latter develop enormous erect flanges of uniform thickness, so that solid circular pieces may occasionally be cut from them to form ready-made cart wheels. The tree is much cultivated for shade or ornament in Java. It bears in great abundance large pendent clusters of dark-purple fruits which are the size of small plums; these are produced all the year round, but chiefly in June. The kernel of the fruit is edible, being similar in flavor to sweet almonds; it yields by expression an oil for burning in lamps and for cooking purposes. A desirable tree for planting in avenues, etc. It thrives in hot and moist districts up to an altitude of about 1,500 feet, and prefers deep well-drained soil. Propagated by seed, which may be sown in nursery beds and kept moist and shaded until germinated." (*Macmillan, Handbook of Tropical Gardening and Planting*, p. 146.)

For an illustration showing Java almond trees growing in Buitenzorg, see Plate I.

43025. GOSSYPIUM HIRSUTUM L. Malvaceæ. Cotton.

From Camaguey, Cuba. Presented by Mr. Robert L. Luáces, director, Granja Escuela Gaspar Betancourt Cisneros. Received July 5, 1916.

"Bolls from plants grown by Mr. Minor at Bartle, Cuba." (*Luáces*.)

43026. ANANAS SATIVUS Schult. f. Bromeliaceæ. Pineapple.

From Singapore, Straits Settlements. Presented by Mr. J. L. Anderson, director, Botanic Gardens. Received July 18, 1916.

Suckers of the following varieties were mixed when received and were given only one number: *Harvey's*, *Mauritius*, *Pernambuco*, *Ruby*, *Sarawak*.

43027. BELOU MARMELLOS (L.) Lyons. Rutaceæ. Bel.
(*Aegle marmelos* Correa.)

From Poona, Bombay, India. Presented by Mr. P. S. Kanetkar, superintendent, Botanical Gardens, at the request of Mr. G. A. Gammie, imperial cotton specialist, Kirkee, India. Received July 5, 1916.

"A small spiny tree, originally a native of India, now commonly grown in the low country of Ceylon and other tropical countries for its fruits. The latter are globular, with a hard, green shell, and vary in size from that of a cricket ball to that of a melon; it incloses a mass of doughy aromatic pulp, intermingled with which is a limpid glutinous substance which some people relish for its flavor but more particularly for its medicinal value. This is a well-known specific for dysentery and is much used in native medicines. The principal season for the fruits is during the months of February to May. The tree is propagated by seed and thrives in ordinary good soil." (*Macmillan, Handbook of Tropical Gardening and Planting*, p. 134.)

See S. P. I. Nos. 38389 and 41133 for previous introductions.

43028. BELOU MARMELLOS (L.) Lyons. Rutaceæ. Bel.
(*Aegle marmelos* Correa.)

From Rangoon, Burma, India. Presented by Rev. H. S. Hascall. Received July 5, 1916.

"Season for fruit, March and April. You will notice that some of the seeds are clean and others are not free from the mucilaginous matter which is so difficult to remove and which is so susceptible to dampness that it takes only a little fog to make them adhere to each other." (*Hascall*.)

43029 to 43031. ULMUS spp. Ulmaceæ.**Elm.**

From Kief, Russia. Purchased from Messrs. St. Przedpelski and T. Antoniewicz. Received July 3, 1916.

43029. Received as *Ulmus androsowi* Litv., for which a place of publication has not yet been found.

43030. Received as *Ulmus bobyriana* Litv., for which a place of publication has not yet been found.

43031. ULMUS DENSA Litv.

"An elm of remarkably dense growth, sprouting a little distance above the ground into a number of stems which form an umbrellalike head of foliage which is so dense that it seems always twilight, even at bright noon, in an avenue of these trees. This elm apparently loves a climate with long, hot summers and with winters not too cold. It withstands a fair amount of alkali in the soil and in the irrigation water. It is of especial value as a shade tree in the hot and dry interior valleys of California, in Arizona, Texas, and New Mexico." (*Frank N. Meyer.*)

For a previous introduction, see S. P. I. No. 32831.

43032 and 43033. JUGLANS INSULARIS Griseb. Juglandaceæ.**Cuban walnut.**

From Santiago de las Vegas, Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station. Received July 22, 1916.

"This interesting Cuban tree has recently been called to the attention of horticulturists by Van Hermann and Roig. It is found in the mountainous sections of the island, sometimes at considerable altitudes. I have seen it in the mountains near Trinidad, on the south coast, at about 2,000 feet, growing among numerous other trees along the banks of small streams. It seems, however, to be comparatively rare, and does not occur in great numbers. It is erect and slender in habit, growing to a height of 40 or more feet, with foliage somewhat finer than *Juglans nigra* of the United States. The nuts resemble those of *Juglans nigra* in size and appearance, though sometimes smaller. The kernels, however, are removed with difficulty, the septæ being very thick and woody. In its present wild state the Cuban walnut, as it is called, does not seem to be of great horticultural value, but with very little improvement by selection it seems that it might become an excellent nut for tropical regions. It has been suggested that it might serve as a stock for the Persian walnut, making possible the culture of this species in Cuba and other tropical regions where it is not successfully grown. For illustrations of the tree and fruit, see *Journal of Heredity*, December, 1915." (*Wilson Popenoe.*)

43032. "Cuban native walnut, collected at Trinidad Station, Santa Clara Province." (*Roig.*)

43033. "Cuban native walnut, collected at Taco Taco, Pinar del Rio Province." (*Roig.*)

43034. LITCHI CHINENSIS Sonner. Sapindaceæ.**Litchi.**

(*Nephelium litchi* Cambess.)

From Swatow, China. Presented by Mr. G. C. Hanson, American consul. Received July 25, 1916.

"Grown in the neighborhood of Chaochowfu. This fruit is placed on the market at the beginning of the summer and can be obtained during only a very short period. The Swatow litchi has the reputation of not being as good as the Canton variety, which also matures early in the summer." (*Hanson.*)

43035 and 43036. ARACHIS HYPOGAEA L. Fabaceæ. Peanut.

From Buitenzorg, Java. Presented by Mr. L. Koch, Plant Breeding Station for Annual Crops. Received July 20, 1916.

43035. "Pure strain No. 21. Is almost unaffected by a severe malady known here under the name of bacterium disease. Cultivated at the Plant Breeding Station for Annual Crops." (*Koch.*)

43036. "The variety cultivated here by the natives." (*Koch.*)

43037. RUBIA TINCTORUM L. Rubiaceæ. Madder.

From Paris, France. Procured from Vilmorin-Andrieux & Co. Received July 25, 1916.

"The root of *Rubia tinctorum* furnishes dyer's madder. The plant is a native of the south of Europe and is extensively cultivated about Avignon and in the Alsace for the roots, which afford the fine scarlet dye so highly valued by dyers and calico printers. A great quantity is grown in the Levant, the north of Africa, and in Holland; but that from Africa and the East, particularly that from Cyprus, is the most esteemed. Several attempts have been made to cultivate it in this country [England], but without success. The roots are dug up in the third summer after sowing and, having been deprived of their cuticle, are dried by artificial heat and then reduced to a powder. Madder has a bitter, astringent taste and imparts these properties to water and alcohol." (*Hogg, Vegetable Kingdom, p. 415.*)

43038. BUCHANANIA LATIFOLIA Roxb. Anacardiaceæ.

From Burma, India. Presented by the superintendent, Royal Botanic Garden, Sibpur, near Calcutta, India. Received July 22, 1916.

"A medium-sized tree, leafless only for a short time, met with in the dry forests throughout India and Burma, ascending in the sub-Himalayan tract to 3,000 feet. A pellucid gum (*peal* or *pial*) which exudes from wounds in the stem is more than half soluble in water. It is said to resemble Bassora gum, to have adhesive properties like inferior gum arabic, and to be suitable for dressing textiles. The bark and the fruit furnish natural varnish. The kernels yield a sweet and wholesome oil (*chiroji*), but owing to their being much prized as a sweetmeat when cooked, the oil is seldom expressed. The kernels, which have a flavor something between that of the pistachio and the almond, are eaten by the natives. In the hills of central India the fruits with the kernels are pounded and dried and subsequently baked into a sort of bread. From the Panjab and Bombay the leaves are reported as used for fodder. The timber is not very hard nor durable and is of small value, though made into spoons, plates, toys, and bedsteads, and is even employed for doors and window frames, plow handles, etc." (*Watt, Commercial Products of India, p. 188.*)

43039 to 43048.² PRUNUS BOKHARIENSIS Royle. Amygdalaceæ. Plum.

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens. Received July 25, 1916.

² See footnote, p. 9.

43039 to 43048—Continued.43039. *Late yellow.*43044. *Large red.*43040. *Alubokhara small.*43045. *Alucha red.*43041. *Alubokhara large.*43046. *Large yellow.*43042. *Alucha purple.*43047. *Dwarf early yellow.*43043. *Early large red.*43048. *Ladakh.***43049. ERYTHRINA POEPPIGIANA (Walp.) O. F. Cook. Fabaceæ. Bucare.**

From Mayaguez, Porto Rico. Presented by Mr. D. W. May, agronomist, Agricultural Experiment Station. Received July 3, 1916.

A leguminous tree commonly used for cacao shade in the West Indies. It attains 60 feet in height, but its wood is said to be so soft and water-logged as to be of no use even for fuel and so brittle that it will not withstand windstorms. It is being replaced in the cacao plantations because of this brittleness, because the leaves are off the tree from January to May, when they are most essential, and because the roots are surface feeders and interfere with cultivation. (Adapted from Cook, *Shade in Coffee Culture*, Bul. 25, Division of Botany, 1901.)

43050 to 43060.

From El Banco, Bolivar, Colombia. Collected by Mr. H. M. Curran. Numbered August 1, 1916. Quoted notes by Mr. Curran except as otherwise indicated.

43050. *CEREUS* sp. Cactaceæ.

Cactus.

Cuttings of an "ornamental white-flowered cactus, growing in immense masses on the limbs of forest trees."

43051. *CRINUM* sp. Amaryllidaceæ.

Bulbs of "a low, ornamental forest plant; flowers white, fragrant. Highly prized by the natives of Colombia."

43052. *AMORPHOPHALLUS* sp. Araceæ.

Corms of an "ornamental medicinal plant, used as a remedy against snake bite."

43053. *ZEPHYRANTHES* sp. Amaryllidaceæ.

"Bulbs of a small white Amaryllis. Cultivated in the gardens of the natives along the Magdalena River."

43054. *ARISTOLOCHIA* sp. Aristolochiaceæ.

"Seeds of a fine Aristolochia, ornamental, growing wild in the low lands of the Magdalena River."

43055. *SCHEELEA EXCELSA* Karst. Phœnicaceæ.

Palm.

"Trunk 40 to 50 feet high, 2 to 3 feet in diameter; wood reddish. Leaves 15 to 24 feet long, pinnate. Inflorescence in the axils of the leaves, long pedunculate; peduncle 4 to 5 feet long; spathe solitary, fusiform; spadix simply and sparsely branched, 3 feet long, branches 4 to 6 inches long. Fruit drupaceous, edible, ovoid apiculate, about the size of a duck's egg; pericarp mucilaginous, oily, intermixed with fibers; epicarp leathery, yellow; seed bony, one to three celled. Grows in hot valleys of the Magdalena and Canea up to an altitude of about 3,000 feet." (C. B. Doyle.)

43050 to 43060—Continued.

43056. *ATTALEA SPECTABILIS* Mart. Phœnicaceæ.

Palm.

Ornamental Brazilian palm, stemless or with a very short caudex. The erect or spreading leaves are 18 to 21 feet long; the lower segments are 3 to 4 feet and the upper 12 to 16 inches long. The fruit is about as large as a hen's egg. A native of the banks of the Amazon. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 1, p. 428.*)

43057. *BULNESIA ARBOREA* (Jacq.) Engl. Zygophyllaceæ.

"*Guayacan.* One of the principal trees of this region; wood hard, durable; 60 to 70 feet high, 24 inches in diameter. Flowers yellow. Timber weathers, being used for railroad ties, which are not expensive. Magdalena River above Calamar, March 25, 1916."

43058. *ASTROCARYUM* sp. Phœnicaceæ.

Mat palm.

"*Palma estera.* Common palm of the forest, Tierras de Loba, Bolivar, Colombia. Seeds with an edible coating and will probably yield a commercial oil. Plants with huge ornamental fronds, 20 feet or more in length, glossy green above, glossy or silvery white beneath. Entire plant covered with sharp black spines. This palm has practically no stem. Suitable only for planting in moist localities or greenhouses."

43059. *CANAVALI ENSIFORME* (L.) DC. Fabaceæ.

Jack bean.

"From Tierras de Loba, Bolivar."

"In Porto Rico the jack bean has been found very useful as a green-manure and cover crop in citrus groves. Its bushy habit makes it especially desirable, as it does not interfere by climbing the trees, while its dense, vigorous growth shades the ground during the heat of summer and provides abundant vegetable matter to add to the soil. Its successful utilization as green feed in Hawaii encourages the belief that it may be found equally valuable in this country, especially in Texas and Oklahoma, where its great drought resistance gives it particular promise." (*C. V. Piper, in Bureau of Plant Industry Circular 110, p. 33.*)

43060. *GOSSYPIUM* sp. Malvaceæ.

Cotton.

"*Barranquilla* cotton. Common cotton from a small plantation on the banks of the Magdalena River in the vicinity of Mompos. This seed was probably distributed by the Department of Agriculture of Colombia. Plants 4 to 6 feet in height and full of fruits and flowers at the time of collection, June, 1916."

43061 to 43069.³ *RAPHANUS SATIVUS* L. Brassicaceæ. Radish.

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Numbered August 4, 1916.

43061. *Thirty Days.*43065. *Bottle.*43062. *Miyashige.*43066. *Sakurajima Mammoth.*43063. *All Seasons.*43067. *Shogoin.*43064. *Ninengo.*43068. *Nerima.*

43069. "*Long String.* This is a sort of Japanese radish, and the peculiarity of this variety is that it grows over 3 feet long with a circumference of 2 to 3 inches. A most suitable variety for pickling purposes." (*Yokohama Nursery Co., Catalogue, 1916, p. 77.*)

³ See footnote, p. 9.

43070. ANANAS SATIVUS Schult. f. Bromeliaceæ. Pineapple.

From Lawnton, Queensland, Australia. Suckers presented by Mr. Reginald W. Peters, director, Queensland Acclimatization Society. Received August 3, 1916.

"A seedling pineapple we raised and have named *Commonwealth*. It is distinct, of fair size, and very tender, with almost entire absence of stalk or core. It is sweet and perhaps lacking a little in subacidity, but is a fruit most consumers would enjoy." (*Leslie Gordon Corrie*.)

43071 and 43072.

From South Yarra, Melbourne, Australia. Presented by Mr. J. Cronin, curator, Melbourne Botanic Gardens. Received July 24, 1916.

43071. OWENIA VENOSA F. Muell. Meliaceæ. Queensland sour plum.

An Australian tree reaching a height of 40 feet, with a diameter of 3 feet. A native beverage is made from the sour fruit, and the durable, easily worked wood, which is of great strength and is highly colored in various shades from yellow to black, is used for cabinetwork, although its excessive weight and hardness are against its common use. (Adapted from *Maiden, Useful Native Plants of Australia*, pp. 49 and 581.)

43072. LIVISTONA AUSTRALIS (R. Br.) Mart. Phœnicaceæ.

Australian fan palm.

"An Australian fan palm with stem reaching a height of 80 feet, slender and marked with circular scars; leaves in dense crown, round, 3 to 4 feet in diameter, divided to or below the middle into 40 to 50 narrow, acuminate segments, either entire or two cleft at the apex. It is more stubby growing in greenhouse culture than *Livistona chinensis*, the leaves are stiffer, smaller in proportion, and less graceful, and the footstalks are more thoroughly armed with stout spines. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 4, p. 1895.)

43073. COFFEA AMARA Bruijning. Rubiaceæ. Coffee.

From Fort Dauphin, Madagascar. Presented by Mr. G. Regnard, Port Louis, Mauritius. Received August 1, 1916.

"Local name *Mautsaka*. French name *Café Marchal*. Without caffeine." (*Regnard*.)

43074. URENA LOBATA L. Malvaceæ.

From Santiago de las Vegas, Cuba. Presented by Mr. Juan T. Roig, botanist, Agricultural Experiment Station. Received August 5, 1916.

"The most promising native fiber plant, known as *Malva blanca*. Is considered a good substitute for jute." (*Roig*.)

43075. TUMION NUCIFERUM (L.) Greene. Taxaceæ.
(*Torreya nucifera* Sieb. and Zucc.)

From Hankow, China. Procured through the American consul general. Received July 14, 1916.

Fei tzu. "Occurs in the southern islands of Japan and in the forests of southern and central Hondo, attaining its greatest development on the banks of the Kisagawa River, rising to a height of 80 feet and forming a tree unequaled in the massiveness of its appearance and in the beauty of its bright red bark and lustrous dark-green, almost black foliage. On the southwest



AN AVENUE IN BUITENZORG LINED WITH JAVA ALMOND TREES (*CANARIUM INDICUM* STICKM., S. P. I. No. 43024).

The stately Java almond, generally acknowledged to be one of the most beautiful of avenue trees, yields an abundance of large-kernelled edible nuts, similar to the pili nut of the Philippines. The oil from this nut has been used by certain Dutch doctors to make an emulsion for an infant food, and its possibilities as a special oil for infant feeding deserve study. Seeds have been secured for trial in the Panama Canal Zone. (Photographed by Dr. M. Treub, Buitenzorg, Java, Feb. 10, 1909.)



AN IMPORTANT OIL PRODUCER IN THE TROPICS, THE BRAZIL NUT (*BERTHOLETIA NOBILIS* MIERS., S. P. I. No. 43114).

This giant of the Brazilian forests is a stately and imposing ornamental tree. Its nuts yield a vegetable oil that deserves considerable attention. Its uses by watchmakers and artists would seem by no means to delimit its possibilities, although over a million dollars' worth of nuts were imported into the United States in 1914 for these purposes and for the edible kernels. The kernels yield approximately 70 per cent of oil. (Photographed by Mr. O. W. Barrett at the Royal Botanic Gardens, Port of Spain, Trinidad.)

coast of Hondo, where it is associated with camellia, *Diospyros kaki*, and other garden favorites, it is somewhat different from the inland trees; the head is more dense and with a rounded top not unlike that of some of the older yews in this country; the leaves too are shorter, narrower, and more pointed. The wood is strong and straight grained; it is much valued for building and cabinetmaking." (*Veitch, Manual of Coniferæ*, 2d ed., p. 119.)

43076 to 43112. PRUNUS NIGRA Ait. Amygdalaceæ.

Canada plum.

From Canada. Scions secured by Mr. M. J. Dorsey, University of Minnesota, St. Paul. Received August 7, 1916.

43076 to 43088.

"Scions from the most promising of the W. D. Buchanan seedlings, growing in the orchard at the Manitoba Agricultural College. These were selected for their promise from the larger collection of Mr. Buchanan and represent the best wild types found in the range of the species in Canada. No records are available as to their exact place of origin. The numbers refer to the row and tree locations in the above orchard." (*Dorsey.*)

43076. Row 1, tree 1.	43083. Row 2, tree 16.
43077. Row 1, tree 14.	43084. Row 2, tree 24.
43078. Row 1, tree 16.	43085. Row 2, tree 26.
43079. Row 1, tree 25.	43086. Row 3, tree 9.
43080. Row 1, tree 26.	43087. Row 3, tree 13.
43081. Row 1, tree 27.	43088. Row 3, tree 16.
43082. Row 2, tree 1.	

43089 to 43112.

"Scions taken from the best trees now remaining in the Buchanan nursery, near Winnipeg. These were selected with the assistance of Mr. Buchanan and are numbered as they were cut. All records of their origin are lost and no labels are legible. The types represent the best of the species in Canada and should be of interest both for their fruit and also taxonomically. None of the seedlings show any evidence of winter-killing, and for this reason they are no doubt of value as breeding stock for the northern United States." (*Dorsey.*)

43089. No. 1, tree 16.	43101. No. 15.
43090. No. 3.	43102. No. 16.
43091. No. 4.	43103. No. 17.
43092. No. 5.	43104. No. 18.
43093. No. 6.	43105. No. 19.
43094. No. 7.	43106. No. 20.
43095. No. 8.	43107. No. 21.
43096. No. 10.	43108. No. 22.
43097. No. 11.	43109. No. 23.
43098. No. 12.	43110. No. 24.
43099. No. 13.	43111. No. 25.
43100. No. 14.	43112. No. 26.

43113. MANGIFERA INDICA L. Anacardiaceæ. Mango.

From Pasumalai, Madura District, southern India. Presented by Rev. J. X. Miller, American Mission High School and Training Institution. Received August 7, 1916.

Seeds of a large mango.

43114. BERTHOLLETIA NOBILIS Miers. Lecythidaceæ. Brazil nut.
(*B. excelsa* Berg. not Humb. and Kunth.)

From Para, Brazil. Secured through Mr. George H. Pickerell, American consul. Received August 8, 1916.

"*Brazil nut* or *Para nut*. A tall handsome tree, with oblong wavy leaves which are 14 to 16 inches long and about 3 inches broad, native of Guiana, Venezuela, and Brazil. In its native home, especially on the banks of the Amazon and Orinoco, the tree attains a height of over 100 feet. The tree was introduced at Peradeniya in 1880, and notwithstanding the indifferent ground chosen for it when first planted out, appears to find here a congenial home. It is now [1914] about 60 feet high and produces at the top each year, in the dry season, large erect racemes of white flowers, followed a few months later by a number of large brown fruits which hang on the trees for some months after ripening. Ridley records similar success with the tree at Singapore, where it was introduced in 1881. Each fruit is from 4 to 6 inches in diameter, with a hard brown woody shell which has to be sawed or broken open with an axe in order to obtain the nuts (seeds). In the interior, closely packed, are from 10 to 12 large angular seeds, with a brown horny testa; these are the Brazil nuts of commerce, which form an important article of export from their native country, being largely used for dessert in Europe, America, etc. The tree may be propagated by seed or gootee (layering) and thrives best on a rich alluvial soil in a hot and moist climate." (*Macmillan, Handbook of Tropical Gardening and Planting*, 2d ed., p. 144.)

For an illustration of a Brazil nut tree growing on the island of Trinidad, see Plate II.

43115. PASSIFLORA LUTEA L. Passifloraceæ. Granadilla.

From Augusta, Ga. Presented by the P. J. Berckmans Co. Received August 8, 1916.

"The ordinary 'passion flower' of the South, climbing or trailing to a height of 10 feet. Flowers greenish yellow, nearly an inch across; berries half an inch in diameter, smooth, deep purple, not edible. This vine occurs native as far north as Pennsylvania and Illinois, and it is quite probable that resistant hybrids with edible passifloras may be secured." (*Fairchild*.)

43116. BUTIA BONNETI (Linden) Becc. Phœnicaceæ. Palm.

From Fruitland Park, Fla. Presented by Mr. Louis Bosanquet. Received July 24, 1916.

H. Nehrling describes this palm as follows: "*Cocos gaertneri* Hort. This is one of the very best of our garden palms, a fast grower, very elegant, and with a dense leaf crown of rather erect fronds. My specimen is about 15 years old. I raised it from seed, which was sent to me by the late Mr. Gaertner from southern Brazil. . . . The trunk is at present 6 feet high and is covered all over with several species of orchids, bromeliads, cacti, etc. . . . It bears heavily, and I have counted as many as 980 fruits in one bunch. They are closely packed, of the size of a small plum, orange-yellow with a red cheek,

very juicy, intensely fragrant, and of an apricot flavor. . . . This is a most beautiful palm, reminding one in its shape very much of *C. datil*, but it is not so massive. The leaves are about 10 feet long." (See *Proceedings of the Twenty-Second Annual Meeting of the Florida State Horticultural Society, May, 1909, p. 57.*)

"Blumenau, who first described this species, recommended it for cultivation because of its great hardiness. He says that it grew in a locality exposed to occasional frosts and even snow, with temperatures of 10° or 12° C. below freezing. Barbosa Rodriguez, in a recent work on the Brazilian palms, has placed this species as a synonym under *Cocos eriospatha*." (*C. B. Doyle.*)

43117 and 43118.⁴ ZEA MAYS L. Poaceæ. Corn.

From Ottawa, Canada. Presented by Mr. J. H. Grisdale, director, Central Experiment Farm. Received August 18, 1916.

43117. "*Early Malcolm* sweet corn, a variety which Mr. Logsdail says is nothing more than the *Malakoff* which Hansen brought from Russia and which is the only variety that matures consistently in the region of Ottawa." (*Mr. Fairchild's report, 1915.*)

43118. "*Early Ottawa*. This strain was produced by employing *Early Malcolm* as the pollen parent and *Early Adams* as the female parent. We have found that this seed does best in areas where the average length and development of the season are similar to our conditions around Ottawa." (*A. J. Logsdail.*)

For an illustration of this sweet-corn hybrid, see Plate III.

43119 to 43123.⁴ ANANAS SATIVUS Schult. f. Bromeliaceæ. Pineapple.

From Singapore, Straits Settlements. Presented by Mr. I. H. Burkill, director, Botanic Gardens. Received August 16, 1916.

Suckers of the following varieties:

- | | |
|----------------------------|-------------------------|
| 43119. <i>Harvey's</i> . | 43122. <i>Ruby</i> . |
| 43120. <i>Mauritius</i> . | 43123. <i>Sarawak</i> . |
| 43121. <i>Pernambuco</i> . | |

43124 to 43187.

From Avondale, Auckland, New Zealand. Plants presented by Mr. H. R. Wright. Received August 12, 1916. Quoted notes from the Avondale Nursery catalogue, except as otherwise noted.

43124 to 43138.⁴ AMYGDALUS PERSICA L. Amygdalaceæ. Peach.

(*Prunus persica* Stokes.)

43124. "A 1.⁴ A counterpart of *Paragon*, ripening about March 9, also a seedling from *Elberta*. An ideal-market peach. The growth is short, thick, and compact, with very large, handsome foliage. Tree an annual and heavy bearer."

43125. "*Golden Queen*. A yellow-fleshed clingstone, raised by Mr. Reeves, Tauranga. It is claimed to be one of the best canning peaches. Tree compact in growth, heavy cropper; fruit of medium size, deep yellow to stone, and will hang well."

⁴ See footnote, p. 9.

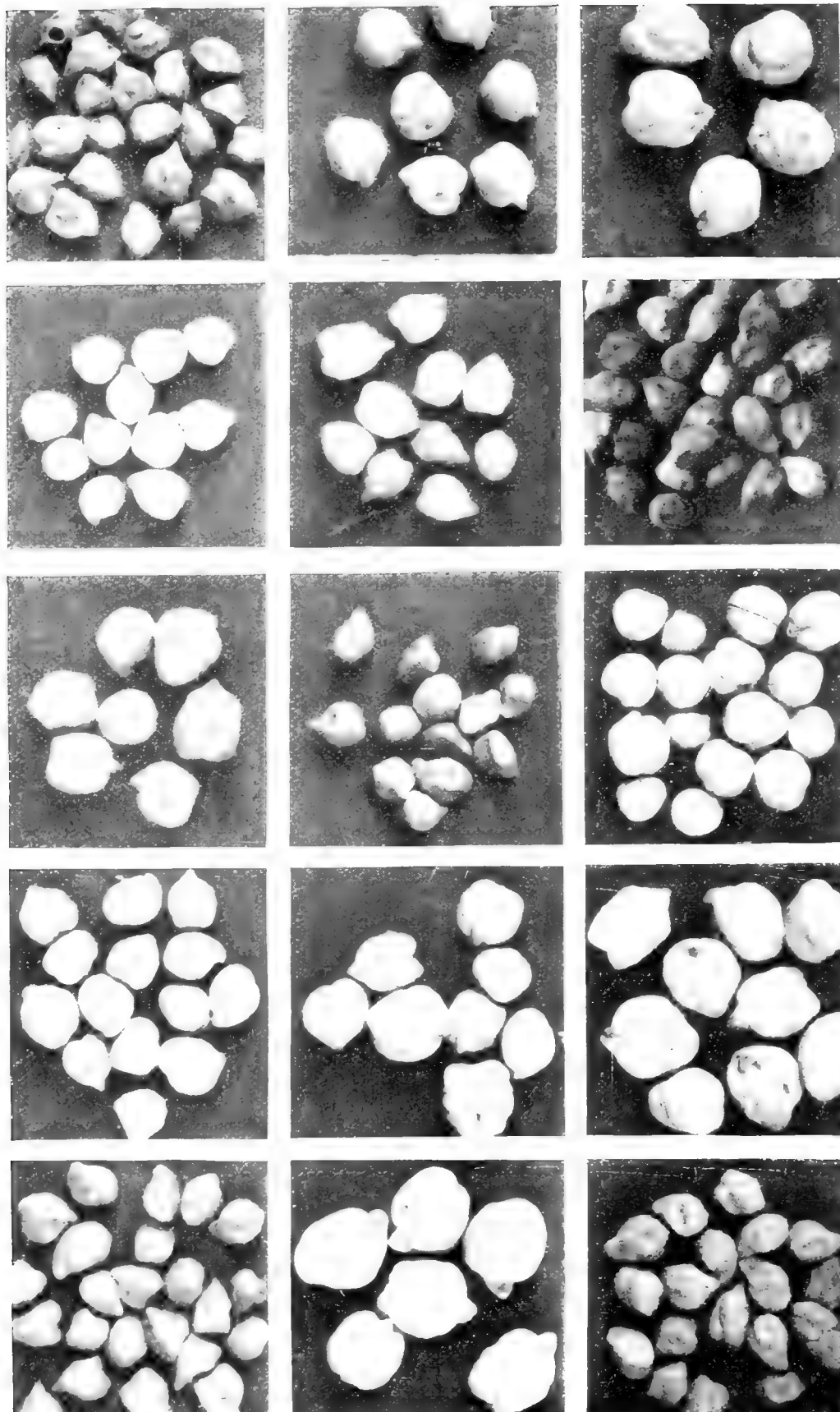
43124 to 43187—Continued.

43126. "*Ice Cream*. A cross between *Up-to-Date* and *Osprey Improved*. Tree very vigorous, enormous dependable cropper; fruit of large size, ripening just after *Osprey Improved* [S. P. I. No. 43134], cream color, with red on sunny side, freestone, exquisite flavor."
43127. "*Ideal*. New, second early, very good."
43128. "*Kerr's Late*. A seedling from *Salway*. The fruit is large, with a deep yellow skin and beautiful red cheek; a perfect freestone; one of the most dependable croppers of late peaches."
43129. "*Late Champion*. Resembles *Waikato Champion*, but, unlike that variety, is a good cropper and ripens about three weeks later. It is one of the largest peaches grown, and bears heavy and regular crops every year."
43130. "*Lippiatt's Late Red*. Another fine peach; color creamy, mottled, striped, and overspread with dark red; tree a fine grower and an immense bearer."
43131. "*Model*. Seedling from *Paragon*. This peach, as its name implies, leaves nothing wanting in a commercial fruit of very large size; heavy cropper, good quality, and of beautiful color; yellow flesh, semicling; little later than *Paragon* [S. P. I. No. 43135]."
43132. "*Motion's Cling*. A large clingstone, resembling *Stark* in appearance; an ideal market variety, being of very high color; will prove a commercial peach; a great cropper."
43133. "*Muir's Perfection*. This is one of the finest midseason peaches I have ever seen; its rare size and handsome appearance will easily place it as a sure prize winner. Its flavor is delicious, flesh white, freestone. Fruits beautifully colored, even in the shade of the tree. In shape like that of *Sea Eagle*, and often quite as large. For commercial or home use it, without a doubt, will become a great favorite."
43134. "*Osprey Improved*. A fine peach for home use, fine size and good quality, but too soft and lacking in color for market; a most dependable cropper."
43135. "*Paragon*. A yellow-fleshed clingstone peach of my own raising. All points considered, as an all-round peach it stands alone in its season. In the whole catalogue no peach can compare with it from year to year for cropping. *Paragon* is a favorite with all growers. It is too well known now to require further comments. As a cropper it will rank among peaches as *Burbank* among plums."
43136. "*Shipper Cling*. A very large clingstone peach of our own raising, with deep pumpkin-yellow flesh, orange-yellow skin, very red cheek, and a very attractive appearance. It is by far the finest peach for either bottling or canning, for when preserved the fruit remains intact. Those growing peaches for their own bottling should try this grand peach, as it is simply delicious."
43137. "*Up-to-Date*. Yellow-fleshed freestone seedling of my own raising. Most vigorous of all peaches; tree heavy bearer; fruit of immense size and of delicious flavor. This variety we find better suited for canning and home use, being rather tender for long shipments."



AN EARLY-MATURING CROP FOR THE NORTH, SWEET CORN (ZEA MAYS L., S. P. I. No. 43118).

A cross between the Early Malcolm (staminate parent) and the Squaw corn (pistillate parent). The Early Malcolm (a straight selection from the Malakoff, S. P. I. No. 13, an early introduction from Russia) is the only variety that matures regularly in Ottawa. The cross is a very sweet variety. (Photographed by Mr. Fairchild, Sept. 17, 1915, at the Central Experimental Farms, Ottawa, Canada; P19316FS.)



SEEDS OF A STAPLE FOOD PRODUCT IN SPAIN, A FEW OF THE NUMEROUS VARIETIES OF CHICK-PEA (*CICER ARIETINUM* L., S. P. I. Nos. 43273-43280).

The chick-pea, or garbanzo of Spanish countries, is used very extensively. In some regions it stands next in importance to wheat as a food plant. It is employed in meat stews almost universally in Spain and is eaten as a breakfast dish in Asia Minor in the form of a puree. Muffins made from chick-pea meal closely resemble corn-meal muffins. The chick-pea is an arid-region plant and does not thrive where the summers are moist. Its leaves are covered with sticky hairs containing oxalate of lime; this makes it somewhat disagreeable to harvest by hand. In regions where it grows well it should be carefully studied as an important leguminous grain crop. (Photographed by E. C. Crandall, Dec. 21, 1909; P6248FS.)

43124 to 43187—Continued.

43138. "*Weeping*. These are most showy and decorative trees to plant, being ornamental as well as useful. The pendulous habit makes them very conspicuous when planted on a lawn or drive. If the ground is well manured and cultivated around them, they will produce great crops of fruit of splendid quality. These are worked on standard stocks, ranging in height from 5 feet to 6 feet 6 inches."

43139 to 43146.⁵ *AMYGDALUS PERSICA NECTARINA* Ait. Amygdalaceæ.

Nectarine.

43139. "*Anscene*. The parent of *Goldmine*. The fruit is of the largest size and of very light color; flesh tender, melting, and of most delicious flavor; tree extremely hardy and a regular cropper."

43140. "*Diamond Jubilee*. This new nectarine is very large in size, larger than any except *Zealandia*; bright red in the sun, dull red in the shade; flavor exquisite, flesh greenish white, melting, and very sweet; a prodigious bearer. Young transplanted trees in the nursery rows were carrying fruit, and the branches of the older trees were bending down with the weight of fruit. The points in this nectarine are its heavy cropping, large size, and delicious flavor."

43141. "*Goldmine*. The fruit is of enormous size. It is a perfect freestone, the pit being extremely small for so large a fruit. The fruit is a beautiful cream color, tender, juicy, melting, sugary, and of most delicious flavor; color bright bronzy red; season of ripening, second week of February; a very heavy cropper."

43142. "*Lippiatt's Late Orange*."

43143. "*Muir's Seedling*. A new seedling of the *Goldmine* type, resembling that variety in size and color, but ripening when *Goldmine* is all finished, thus prolonging the season and an acquisition on that account."

43144. "*New Boy*. Fruit of large size and extremely handsome, covered all over with brilliant crimson; flesh white, juicy, sugary, and of exquisite flavor; tree very hardy and a profuse cropper; one of the best."

43145. "*Radium*. A new nectarine of large size, orange shaped, highly colored, very sweet; ripens just after *Goldmine*. It is quite free from that objectionable point which all the large nectarines possess; therefore, for packing, *Radium* comes first."

43146. "*Surecrop*. A seedling of my own raising, which resembles *Goldmine* in size and appearance, but is a much heavier cropper. It has never failed to carry a full crop. I have every confidence in recommending this grand new nectarine."

43147. *CITRUS SINENSIS* (L.) Osbeck. Rutaceæ.

Orange.

"*Best Seedless*.⁵ A new local seedling of great merit and, as its name indicates, perfectly seedless; in quality one of the finest we have ever sampled and sure to become a great favorite; the most vigorous of all oranges."

⁵ See footnote, p. 9.

43124 to 43187—Continued.

43148. *ERIOBOTRYA JAPONICA* (Thunb.) Lindl. Malaceæ. **Loquat.**

"*Thames Prize*.* Named so from the fact that it has always carried off the prize at the Thames show, the district of its origin; fruit of large size and very fleshy. Tree very vigorous."

43149 and 43150.* *FRAGARIA* sp.* Roseceæ. **Strawberry.**

43149. "*Melba*.* Fruit large, brilliant red, and of the best flavor when grown in good land; with plenty of moisture it will bear good crops from the beginning of November to May. As the young runners commence to fruit as soon as well rooted, they should be left, making beds, say, 3 feet wide, grown into a solid mass. Although the fruit is covered with foliage, it will still be fully colored. I would strongly recommend this variety to strawberry growers."

43150. "*Phenomenal*. A remarkably early variety; fruit large, splendid flavor and color, carrying well; extremely vigorous. This variety is without doubt the finest carrying strawberry we know of and one that will often produce good autumn crops."

43151 to 43174.* *MALUS SYLVESTRIS* Mill. Malaceæ. **Apple.**
(*Pyrus malus* L.)

43151. "*Bella Davis*. Dessert."

43152. "*Carlton*. A blight-proof seedling from *Northern Spy*; fruit very large, yellow, striped carmine; flesh crisp and juicy; tree a heavy cropper and bears young; season late."

43153. "*Cliff's Seedling*. Raised from pips of *Northern Spy*; fruit medium to large, *Pearmain* shaped. It is highly colored; flavor exquisite; flesh yellow, crisp, and juicy, blight proof, late."

43154. "*Climax*. Dessert. Another perfectly blight-proof apple, raised by Mr. J. F. Smith. Fruit is above medium size and roundish. skin clear waxy yellow, streaked and dotted on the sunny side with lively crimson; flesh yellow, crisp, juicy, tender, and of honeyed sweetness." (*C. A. Nobelius's catalogue*.)

43155. "*Coldstream Guards*. A first-class early summer dessert apple; size medium to large; smooth, round, of bright color and very taking appearance; can not be too highly recommended for market; tree healthy, hardy, and a heavy cropper; resembles *Red Astrachan*; blight proof."

43156. "*Cole's Blushing Bride*. A beautiful dessert apple, of most handsome appearance, and somewhat conical in shape; tree a heavy cropper and blight proof; highly recommended; medium."

43157. "*Diadem*. Dessert cooking."

43158. "*Edward Lippiatt*. A blight-proof seedling raised by Mr. W. E. Lippiatt; fruit large, roundish, sometimes oblate; even and regular in outline; skin yellow, streaked with lively crimson; flesh white, crisp, juicy, and sweet, with a fine aromatic perfume and exceedingly rich flavor. Tree vigorous, a heavy and early bearer. A most vigorous apple for commercial and home use."

* See footnote, p. 9.

43124 to 43187—Continued.

43159. "*General Carrington*. Raised by Mr. J. F. Smith from *Northern Spy* pips. Tree of strong, vigorous, upright habit and perfectly blight proof. Fruit large and handsome; skin yellow, beautifully striped with crimson; flesh yellowish white, rich, crisp, juicy, and sugary, of delicious flavor; late." (*C. A. Nobelius's catalogue.*)
43160. "*George Neilson*. A large early apple, resembling *Red Astrachan*, of which it is said to be an improvement; blight proof."
43161. "*Hay's Midseason*. Fruit large, beautifully striped, bright carmine on greenish yellow ground; flesh firm, yellow, crisp, juicy, sweet, and of exquisite flavor; blight proof." (*C. A. Nobelius's catalogue.*)
43162. "*John Sharp*. Late; fruit large; skin smooth, greenish yellow, covered with red and russet dots; flesh juicy and sweet; tree vigorous and a regular bearer; blight proof; late coming into bearing."
43163. "*Kennerley's May*. Cooking; very late."
43164. "*Lilydale* (dormant buds). Very early dessert."
43165. "*Lord Wolseley*. Fruit medium size, roundish conical; skin clear rich yellow, flesh very firm, juicy, subacid, brisk; tree a constant bearer and quite blight proof; dessert and culinary; late."
43166. "*Marjorie Hay*. A very early dessert apple raised by Mr. H. E. Sharp. Fruit very large and extremely handsome; one of mottled, with lovely red flesh; white, tender, juicy, and very crisp. Highly recommended by the raiser as the best early blight-proof apple."
43167. "*Mona Hay*. A blight-proof seedling raised by Mr. H. E. Sharp; fruit of medium size and of exquisite flavor; one of the best; medium."
43168. "*Patuka* (new); not quite aphid resistant; very late dessert. *Patuka* is Maori for Port Albert." (*Wright.*)
43169. "*Red Spy*. Dessert."
43170. "*Sharp's Late Red*. A blight-proof seedling raised by Mr. H. E. Sharp. Fruit very large and extremely handsome; one of the best."
43171. "*Sharp's Nonesuch*. Cooking."
 "Another of Mr. H. E. Sharp's seedlings. Vigorous grower and blight proof; skin deep yellow, striped with red; flesh yellow, tender, and very juicy; pleasant flavor; medium." (*C. A. Nobelius's catalogue.*)
43172. "*Taupaki* (Maori name of a place). Dessert." (*Wright.*)
 "A New Zealand variety; most highly colored and perfectly shaped fruit; a yellow ground streaked and striped with bright crimson; a good keeper." (*C. A. Nobelius's catalogue.*)
43173. "*Te Whiti*. The tree is a strong, clean, and vigorous grower and an abundant bearer; medium size, dark red in color, rich and of fine flavor; unsurpassed as a late keeper."

43124 to 43187—Continued.

43174. "Willie Sharp."

"A beautiful medium-sized dessert apple; skin yellow, nearly transparent in ripening, flesh crisp, of vinous flavor." (*P. L. C. Shepherd & Son's catalogue.*)

43175 to 43181.⁷ *PRUNUS SALICINA* Lindl. Amygdalaceæ.

Japanese plum.

43175. "*Akarana*. A chance seedling which resembles *Botan*. Tree a vigorous grower and heavy cropper; fruit of magnificent color and firm flesh. A good succession to *Wright's Early*."

43176. "*Alpha*. Of large size and distinct flavor, very firm, ripe with *Akarana*, and a reliable cropper."

43177. "*Export*. A new hybrid, a cross between *Wright's Late* and *Early Golden*; fruit medium to large and very firm; exceedingly sweet. This, like the preceding one, also lacks the foxy taste. This should prove to be one of the most valuable blood plums in existence, owing to being a wonderful keeper; fruit has been kept for six weeks after picking, and on the tree it has been kept for three months. Season, middle of January to April."

43178. "*Sharp's Early*. Raised by Mr. John Sharp, Cambridge. Supposed to be a seedling from *Botan*; fruit heart shaped, medium size, purple in color when thoroughly ripe; tree a great cropper. In season about the 15th of December."

43179. "*Wright's Early* on peach."

"A seedling from *Burbank*, raised by myself; the earliest and most profitable of all plums. The fruit is identical with the well-known *Burbank*, the only difference being its season of ripening and the habit of growth, being more erect, which is a great point in its favor."

43180. "*Wright's Early* on plum." See description under previous number (*S. P. I. No. 43179*).

43181. "*Wright's Purple*."43182. *PRUNUS SALICINA* × (?).

Hybrid plum.

"*Best's Hybrid*." A splendid all-purpose plum, i. e., dessert and culinary. This is a cross between *Cherry* plum and *Ogon*; fruit large, yellow, shaped like *Cherry* plum; tree enormous cropper; the absence of the foxy taste peculiar to Japanese plums is a great point in its favor, and it will become a great favorite."

43183 to 83186.⁷ *PYRUS COMMUNIS* L. Malaceæ.

Pear.

43183. "*Belmont*. A New South Wales seedling, raised from the well-known *Bon Chrétien*, ripening about the 10th of April; shape roundish, tapering slightly to the stalk; skin golden; flavor identical with *Bon Chrétien*; an early and heavy cropper, coming into bearing the second year; first-class dessert."

43184. "*Packham's Late*. Another of Mr. Packham's seedlings, which promises to outrival his *Triumph* [*S. P. I. No. 43185*]; fruit fairly large and heavy cropper. From what I have seen of the *Triumph* I am more than satisfied, as it is unquestionably the finest of its season."

⁷ See footnote, p. 9.

43124 to 43187—Continued.

43185. "*Packham's Triumph*. This is the king of the autumn pears and a triumph in pear culture. The tree is a tremendous cropper and comes into bearing at an early age. In season about the second week in April. We have had the pleasure of both seeing and sampling this grand pear from specimens procured from Sydney by post. It is a counterpart of Williams's *Bon Chrétien* in appearance, flavor, and perfume. It carried off the prize every time it has been exhibited. I should say that it must be a seedling or hybrid from *Williams*. There is a great future in this pear as a money maker."

43186. "*Winter Cole*. Seedling from *Winter Nelis*, which it resembles. Fruit almost round, medium size, pale yellow, spotted with russet; one of the richest of pears."

43187. *ASTELIA* sp. Liliaceæ.

"An epiphyte which grows on the trees. I think the seed would grow best in a mixture of leaf mold and decayed wood dust. A delicious honey is made from the flowers of the plant." (*Wright*.)

43188. *LATHYRUS SULPHUREUS* Brewer. Fabaceæ. **Vetchling.**

From Columbia, Calif. Collected by Mrs. Adele Lewis Grant. Received August 14, 1916.

A smooth-stemmed vetchling from the northwest coast, not rare in open coniferous woods. The flowers are at first pinkish yellow, fading to ochraceous, never sulphur yellow as described by Brewer. (Adapted from *Piper and Beattie, Flora of the Northwest Coast*, p. 225.)

43189. *PTEROCARPUS MARSUPIUM* Roxb. Fabaceæ. **Kino tree.**

From Dindigul, Madura District, southern India. Presented by Rev. W. P. Elwood, American Madura Mission. Received August 12, 1916.

"*Vengai*. A tree with beautiful hard wood. The tree grows at an altitude of 3,000 to 4,000 feet and endures a good deal of heat and drought. A great many of the seeds are destroyed by worms and other insects entering the seed vessel at the side." (*Elwood*.)

For an interesting discussion of kino production, see *Watt, Commercial Products of India*, pp. 908 and 909.

43190 to 43194.

From Africa. Presented by Rev. C. W. Guinter, Sudan United Mission, Northern Nigeria. Received August 9, 1916. Quoted notes by Rev. Mr. Guinter.

43190 and 43191. *PENNISETUM GLAUCUM* (L.) R. Br. Poaceæ.

(*P. typhoideum* Rich.)

Pearl millet.

43190. "A small-grained variety with pearl-gray hulls."

43191. "A variety with slightly larger grains than those of the preceding and with reddish brown hulls."

43192. *PHASEOLUS LUNATUS* L. Fabaceæ.

Lima bean.

"*Brosa* bean."

43193. *SESAMUM ORIENTALE* L. Pedaliaceæ.

Sesame.

(*Sesamum indicum* L.)

"*Bennin*."

43194. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ.

Cowpea.

"Small white bean."

43195 to 43201. RUBUS STRIGOSUS Michx. Rosaceæ. Raspberry.

From Canada. Collected by Mr. M. J. Dorsey, University of Minnesota, St. Paul. Received August 17, 1916. Quoted notes by Mr. Dorsey.

"Raspberries carefully selected from plants bearing berries of the best type for the species in the region around Lake Winnipeg and the Riding Mountains in Canada for the purpose of securing the wild raspberry for breeding purposes in the northern United States. This species grows abundantly and is generally distributed in the localities visited in Manitoba. It is quite similar in appearance in its northern range to that in the northern part of Minnesota, where I have had the opportunity to observe it quite extensively in the wilds, especially in the region of the Red Lakes, Grand Rapids, Cloquet, Mille Lac, etc.

"It seemed from the preliminary survey of the field that it would be best to visit the localities on the edge of the granite area extending in a northerly direction about 60 miles east of Winnipeg, as well as the region of the Riding Mountains. The granite area was visited at points around Lac du Bonnet, the Winnipeg River, and the Pinawa River. From these points on the margin of the granite area in the east I proceeded to the west from Winnipeg to the Riding Mountains. Here *Rubus strigosus* grew generally along ditches and roads and in the burned-over areas of the foothills.

"In the eastern region the raspberries were on the whole bearing more abundantly than those in the west at the Riding Mountains. The isothermal lines extend considerably northward in this region, so it seems to me from the progress of the season and the nature of the vegetation that perhaps all told the selections in the East on the granite area were from stock subjected to harder weather conditions than in the West. Of course, in this part of Canada when winter sets in it is quite constant, and there is generally snow enough to cover raspberries growing in the wild. For this reason there may be an extension of the species northward, owing to its natural protection rather than to its ability to withstand cold."

43195. "From Lac du Bonnet, Manitoba, July 30, 1916. Some splendid types were found in this locality, especially where land had been cleared or burned over recently."

43196. "From Pinawa River, Manitoba, July 31, 1916. From the granite area; some splendid types were found in this area, especially where the land had been cleared or burned over recently."

43197. "From Big George Island, Lake Winnipeg, Manitoba, August 5, 1916. A fishing station is located on Big George Island, which is occupied for the most part by Indians during the summer and vacated during the winter. There are large open areas on the eastern shore where I found the best raspberries of the whole trip. Plants more than 5 feet tall were numerous in the cleared area around the fisheries. They were bearing heavily and the Indians were just beginning to pick. The opportunity for selection here was good. The increased size of the plants was undoubtedly due to the better growing conditions of a water-bounded locality."

43198. "From Little Bull Head, Lake Winnipeg, Manitoba, August 6, 1916. Nearly 100 miles northwest of Lac du Bonnet, on the west shore of the lake. The plants in this region were growing in open areas in the woods and were, in small patches, equal to the best I found in the locality of Lac du Bonnet. The ground for the most part around there was low and quite swampy, so that all told I did not consider the region as favorable as Lac du Bonnet, considering the area which could be covered."

43195 to 43201—Continued.

43199. "From McCreary, Manitoba, August 7, 1916. In the region of Riding Mountains the land was rolling, and the soil was of the black prairie type, underlain with clay and gravel. There were plants enough, so one could search through wide areas and select from large numbers, and I chose what the local authorities considered the best areas."

43200. "From Dauphin, Manitoba, August 8, 1916. In the region of Riding Mountains the land was rolling, with typical black prairie soil underlain with clay and gravel. Selections were made over a wide area."

43201. "From Erickson, Manitoba, August 9, 1916. The land at Erickson was more rolling than at McCreary and Dauphin, and the soil was of the same black type, underlain with clay and gravel. Selections were made over a large area."

43202 to 43212. PRUNUS NIGRA Ait. Amygdalaceæ.**Canada plum.**

From Winnipeg, Canada. Presented by Prof. F. W. Broderick, Manitoba Agricultural College. Received August 21, 1916. Cuttings of the following; quoted notes by Prof. Broderick.

Hardy selected plums from Manitoba. Stock selected from the original collection that Mr. Buchanen made from all parts of the Province and which are now being grown by Prof. Broderick at the Manitoba Agricultural College.

43202. "No. 24. Very early, large size, good quality."

43203. "No. 26. Early, medium size, good quality."

43204. "No. 35. Early, medium size, fair to good quality."

43205. "No. 40. Medium early, medium size, good quality."

43206. "No. 44. Early, large size, good quality."

43207. "No. 50. Early, large size, good quality."

43208. "Row 3, tree 4."

43209. "Row 31, tree 10."

43210. "Row 3, tree 17."

43211. "Row 3, tree 22."

43212. "Row 1, tree 28."

43213. FEVILLEE CORDIFOLIA L. Cucurbitaceæ.**Sequa.**

From San Jose, Costa Rica. Presented by Mr. J. E. van der Laat, Director of Agriculture. Received August 14, 1916.

"The *sequa*, or *cacoon antidote*, of Jamaica, where it is a common plant in shady woods, climbing to great height up the trunks of trees. The fruits are 4 or 5 inches in diameter and contain from 12 to 15 large flat seeds which possess purgative and emetic properties and have an intensely bitter taste. In Jamaica the negroes employ them as a remedy in a variety of diseases and consider them an antidote against the effects of poison; they also obtain a large quantity of semisolid fatty oil, which is liberated by pressure and by boiling them in water." (*Lindley, Treasury of Botany, pt. 1, p. 491.*)

43214. ULMUS FOLIACEA SUBEROSA (Moench.) Rehder. Ulmaceæ.**Elm.**

From Kief, Russia. Procured through Messrs. St. Przedpelski and T. Antoniewicz. Received August 15, 1916.

"*Cork-barked elm*. Like the type in leaf, but of stiff, spreading, low habit, the branches 2 or more years old becoming furnished with usually four conspicuous corky ridges. It has to be noticed, however, that the corkiness of the branches is often noticeable in a greater or less degree in what we regard as the typical *Ulmus nitens*, and if seeds of the most suberous tree were sown, it is probable that there would appear many ordinary *U. nitens* among them. Common in forests of central Europe." (*Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 618.)

Received as *Ulmus turkestanica*, which is recognized by Rehder as a form of *U. foliacea suberosa*.

43215. DIOSPYROS TUPRU Buch.-Ham. Diospyraceæ.

From Poona, India. Presented by Mr. P. C. Patit, Acting Deputy Director of Agriculture. Received August 7, 1916.

A tree of small, moderate, or large size, up to 60 to 80 feet high; diœcious or polygamous; the heartwood is black in some trees and of a hard and heavy substance called at Munghur *Batti* and at Saseram *Abnus*. The latter word is said to be of Persian origin and a source from which our word *ebony* is derived. Trunk gray-black; alternate or opposite, ramified as in the oak. Leaves bright green, 2 to 14 inches long by 1½ to 7½ inches wide. Pistillate flowers three or four, white, one-third to five-twelfths of an inch long; staminate flowers solitary. Fruit egg shaped or globose, about 1 inch long by three-fourths of an inch thick; fruiting calyx surrounding the base of the fruit or spreading. The fruit when ripe is sweet and not very bad to the taste. This valuable tree sheds all its leaves in the cold season, and they appear again in the beginning of the hot weather (Beddome); not uncommon in the Cuddapah, Salem, and Kurnool forests in Madras. (Adapted from *Hiern, Transactions of the Cambridge Philosophical Society*, vol. 12, pt. 1, pp. 158-159.)

43216 and 43217.

From Manila, Philippine Islands. Presented by Mr. Adn. Hernandez, Director of Agriculture. Received August 21, 1916.

43216. MANGIFERA INDICA L. Anacardiaceæ.

Mango.

"*Carabao*. This variety is a native of the Philippines and is without a doubt the best mango fruit I have ever eaten. It is indigenous all over the islands, principally found growing along the walls of the rice paddies. Rarely cultivated in orchard form." (*H. H. Boyle*.)

See S. P. I. 38390 for a previous introduction.

43217. SYZYGIIUM CUMINI (L.) Skeels. Myrtaceæ.

Jambolan.

(*Eugenia jambolana* Lam.)

"A small evergreen tree met with throughout India and Burma, ascending the hills to about 6,000 feet. It is chiefly found along river beds and is especially cultivated for its fruit in gardens and in avenues. There are several varieties that yield much better flavored fruit than others, but as a rule it is astringent and only serviceable when cooked in tarts and puddings. In Goa a wine is prepared from it, and a spirit (*jambava*) is spoken of by recent Sanskrit authors as distilled from the *jambu*. Some years ago brandy was made at Monghyr from the fermented fruit. The *jambu* is extensively used all over India in the manufacture of vinegar. The tasar silkworm is said to feed on the leaves of the tree. The timber is fairly durable and is largely employed for building purposes, for agricultural implements, and for well work, since it resists the action of

43216 and 43217—Continued.

water. It gives a good fuel. The *jambu* is one of the trees held in veneration by the Buddhists and is often placed near the Hindu temples because regarded as sacred to Krishna." (*Watt, Commercial Products of India*, p. 526.)

43218 and 43219.

From Africa. Presented by Rev. C. W. Guintier, Sudan United Mission, Northern Nigeria. Received August 11, 1916.

43218. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

43219. *VOANDZEIA SUBTERRANEA* (L.) Thouars. Fabaceæ. Bambarra ground nut.

"It is somewhat similar to the ordinary ground nut or peanut (*Arachis hypogaea*), but its development of leaves is less abundant; it affords a smaller amount of vegetable matter after it has been harvested, and its cultivation improves the soil to a smaller extent than that of the ground nut. None the less, it is claimed that the cultivation of this plant deserves extension, because it is capable of furnishing useful quantities of nutritious material and because the digging of the nuts is conducted in a far easier and cheaper manner than that of ground nuts." (Extracted from *The Agricultural News*, Oct. 29, 1910.)

43220. *CHAYOTA EDULIS* Jacq. Cucurbitaceæ. Chayote.
(*Sechium edule* Swartz.)

From San Jose, Costa Rica. Presented by Mr. José C. Zeledón, through Mr. O. F. Cook, of the Bureau of Plant Industry. Received August 28, 1916.

"Chayote without fiber; that is, the seed is not inclosed in the usual fibrous bag." (*Zeledón*.)

43221. *ORYZA SATIVA* L. Poaceæ. Rice.

From Africa. Presented by Rev. C. W. Guintier, Sudan United Mission, Northern Nigeria. Received August 11, 1916.

A red-grained form.

43222. *VITIS VINIFERA* L. Vitaceæ. Grape.

From Sydney, New South Wales, Australia. Cuttings presented by Mr. George Valder, undersecretary and director, Department of Agriculture. Received August 30, 1916.

"*Centennial*. This variety is a shy cropper and is inclined to do best in a warm climate, more particularly under irrigation. It is supposed to be a seedling of *Gordo Blanco* and was raised in the first place many years ago by a Mr. Knight, of Bendigo, Victoria." (*Valder*.)

43223. *ANANAS SATIVUS* Schult. f. Bromeliaceæ. Pineapple.

From Barbados, British West Indies. Suckers presented by Mr. Francis Watts, Commissioner of Agriculture for the West Indies. Received August 30, 1916.

"A variety of pineapple obtained from Grenada, concerning which, however, little is known locally. The fruits, which I have seen, somewhat resemble the *Red Spanish* in general shape and appearance, but are somewhat paler in color. The fruit, though somewhat acid, has a fair flavor." (*Watts*.)

43224 to 43226. MANGIFERA INDICA L. Anacardiaceæ. Mango.

From Mexico. Presented by Mr. Frank W. Moore, British vice consul, La Paz, Lower California, Mexico. Received August 29, 1916.

This material was sent in reply to our request for seeds of especially good mangos reported by the United States consul at Mazatlan, Mexico, as growing in the Arroyo de León, near La Paz, Lower California, and probably obtainable through the British vice consul at that place.

43224. From Triunfo, near La Paz.

43225. From La Paz.

43226. From Arroyo de Leon, near La Paz.

43227. HYDNOCARPUS KURZII (King) Warb. Flacourtiaceæ.

(*Taraktogenos kurzii* King.)

Kalanzo.

From Calcutta, India. Purchased from Messrs. Smith, Stanistreet & Co., through Mr. James A. Smith, American consul general. Numbered September 6, 1916.

A large tree, 40 to 50 feet high, from the forests of Sylhet, Chittagong, and Burma. The seeds yield the true chaulmoogra oil, which has recently come into prominence through its remarkable curative effects on leprosy when applied locally and internally.

Dr. Victor G. Heiser, in concluding an article on "Leprosy—Its Treatment in the Philippine Islands by the Hypodermic Use of Chaulmoogra Oil Mixture" (*Am. Journ. Tropical Diseases and Preventive Medicine*, vol. 2, p. 300, 1914), says in part:

"The present stage of the development of the treatment herein described does not warrant a claim that anything like a specific for leprosy has been found, but experience does show that it gives more consistently favorable results than any other that has come to our attention, and it holds out the hope that further improvement may be brought about. It produces apparent cures in some cases, causes great improvement in many others, and arrests the progress of the disease in almost every instance."

43228. VICIA FABA L. Fabaceæ.

Broad bean.

From La Paz, Bolivia. Presented by Mr. John D. O'Rear, United States Minister. Numbered September 20, 1916.

"The only variety of broad bean that is cultivated in this country. The bean is produced very successfully here, especially in the high altitudes, and constitutes one of the principal articles of diet of the Indians of the Altiplano, who use it in roasted form. It is also used widely as a table food, being of very good quality, and when properly prepared it provides a very wholesome and delicious dish. These seeds are dried in the same form as that used by the natives for preserving the seed from one season to another and will have to be soaked in water for two or three days before planting." (*O'Rear.*)

43229 to 43232. VICIA FABA L. Fabaceæ.

Broad bean.

From India. Presented by Mr. J. MacKenna, Agricultural Adviser to the Government of India, Pusa, who obtained them through the superintendent of the Kumaun Government Gardens. Received August 29, 1916. Quoted notes by Mr. MacKenna.

"Of the higher Himalayan forms."

43229. "No. 1. Long podded."

43231. "No. 3. Broad podded."

43230. "No. 2. Long podded."

43232. "No. 4. Broad podded."

43233 to 43236.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received August 29, 1916. Quoted notes by Dr. Proschowsky.

43233. *LITHRAEA MOLLEOIDES* (Vell.) Engl. Anacardiaceæ.
(*L. arocirinha* L. Marchand.)

"Bush or small tree, very resistant to drought; evergreen glossy foliage; quite hardy here."

43234. *OREOPANAX NYMPHAEIFOLIUM* Hort. Araliaceæ.

"Splendid large bush or tree with very large, glossy leaves; quite hardy here."

43235. *PODACHAENIUM EMINENS* (Lag.) Schultz Bip. Asteraceæ.
(*P. paniculatum* Benth.)

"Very quick growing. Becomes in a few years a small tree; large evergreen leaves; large panicles of white flowers. Naturalized in my garden."

43236. *SEMELE ANDROGYNA* (L.) Kunth. Convalleriaceæ.

"A very beautiful climber; splendid foliage; red ornamental berries; evergreen; hardy here; reaches 15 meters in length."

43237. CARICA PAPAYA L. Papayaceæ.**Papaya.**

From the city of Guatemala, Guatemala. Presented by Mr. D. O'Brien. Received September 1, 1916.

"The tree grows well at an altitude of 1,000 to 3,000 feet in these countries, but we have no frost within the height specified. The fruit is delicate and bruises easily. The trees grow best in arid regions where there is very little rainfall. They grow wild, none having been cultivated. The fruit contains pepsin, which I believe could be extracted for medicinal purposes. Fruit could be placed on the market when other fruits are not in season, say during the months of November to January." (*O'Brien.*)

43238. BUTIA CAPITATA PULPOSA (Barb.-Rodr.) Becc. Phœnicaceæ.**Palm.**

From Fruitland Park, Fla. Presented by Mr. Louis Bosanquet. Received August 28, 1916.

"The *Entre Rios* palm, the most massive of all the species, almost rivaling in this respect the Canary Island date, though the leaves are much shorter. In mature specimens the trunk is about 30 feet high. I have a few fine photographs of these palms, said to have been taken by Dr. G. Niederlein in the Misiones, Argentina, which exhibit quite large dense forests of tall specimens growing in rather rocky and stony soil. I have only one specimen now, about 15 feet high with a very thick and massive trunk about 7 feet high. Ferns (*Phlebodium aureum*) grow all around it in dense masses and form a beautiful decoration on the rough stem, which is still provided with the old leaf bases. The magnificent crown of stout, almost upright leaves, overtopping the sturdy trunk, makes the specimen an exceedingly stately one. Each year it matures about eight to nine fruit bunches, weighing from 35 to 50 pounds each. Each fruit, of a light orange color, is as large as a plum, very rich in sugar, juicy, intensely fragrant, like a combination of banana and pineapple, and edible. The fruits are as closely set as a bunch of grapes. I have counted over 1,000 in one cluster. The large divided flower scape is inclosed in a very massive spathe of the size and form of a baseball club, or, as a visitor expressed himself, of a 'huge Hercules club.' Excellent wine, jam, and jelly can be made of the

fruits. The tree grows freely in rich, dry pine-land soil and, like all the other species of this group, it does not seem to require much attention. To Mr. Theo. L. Mead belongs the credit of having introduced this palm into cultivation, but I think his specimens on rich moist land all have perished. It is perfectly hardy and should be grown everywhere in the State and all along the Gulf coast where the soil is suitable." (*H. Nehrling, Transactions of the Florida State Horticultural Society, vol. 22, p. 156 (1909), under Cocos datil.*)

43239 to 43242.

From Burringbar, New South Wales, Australia. Presented by Mr. B. Harrison. Received August 30, 1916.

43239. CHAETOCLOA NIGRIROSTRIS (Nees) Skeels. Poaceæ. **Grass.**
(*Setaria nigrirostris* Dur. and Schinz.)

A hardy tufted grass which has made good growth. Although the leaves are a little hard, there is a very large quantity in proportion to the stem; the grass appears to be a quick succulent grower, carries a good quantity of seed, and grows well in New South Wales. (Adapted from *E. Breakwell, Agricultural Gazette, New South Wales, Feb. 2, 1916.*)

43240. BRACHIARIA BRIZANTHA (Hochst.) Stapf. Poaceæ. **Grass.**
(*Panicum brizanthum* Hochst.)

"This grass is a native of the Transvaal bush veldt. Capt. W. H. F. Hughes, of Zeerust, writes that it grows well on the poorest sandy soil and that cattle are very fond of it. The only previous record we have of its value as a pasture grass is a note from a farmer near Salisbury, Rhodesia, stating that it is eaten by cattle there. We have no record of any vernacular name by which this grass is known." (*J. Burt Davy, Agricultural Journal, Union of South Africa, vol. 1, No. 5, p. 706, June, 1911.*)

43241. PENNISETUM PURPUREUM Schum. Poaceæ. **Grass.**

"The great value of prolific and drought-resistant fodder plants, which are generally very difficult to procure, is well known to stock owners, and the above variety, which as yet is but little known, can be most highly commended for both of these qualities. With me last season, which was a very dry one and which was a most disastrous one for stock, this grass grew to the height of nearly 11 feet and produced a large quantity of succulent, nutritious, and fattening fodder, which is greatly relished by the stock and is, according to analysis, much richer than green maize. A reliable official says: 'There is a consensus of opinion that in this plant we have found a fodder of great value, which remains green even during such long periods as from six to eight months when other herbage is parched up or destroyed.' It grows rapidly to a height of 12 feet or more in favorable weather, thrives well in various soils, and resists both frost and drought to a remarkable extent. At 7 feet high it has produced 12 tons of green fodder per acre, and a few months later 15 tons, making a total yield of 27 tons per acre. It is everlasting when once established, and the tufts or stems increase in size after each cutting or when grazed off. It should prove of untold value to farmers in South Africa, who suffer much loss through frequent and protracted droughts, in the East Indies, and in other countries where a light rainfall and semiarid conditions prevail. As a prolific and drought-resistant plant it promises to prove one of the very best brought into cultivation." (*Harrison.*)

43239 to 43242—Continued.**43242. SPOROBOLUS INDICUS (L.) R. Br. Poaceæ.****Grass.**

A fine, open pasture grass, found through Australia, variously called *rat-tail* grass, *Chilean* grass, and, by the aborigines, *jil-crow-a-berry*. Its numerous penetrating roots enable it to resist severe drought. It yields a fair amount of fodder, is relished by stock, but is too coarse for sheep; the seeds form the principal food of many small birds. It has been suggested as a paper-making material. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 109.)

43243. CAPPARIS MICRACANTHA DC. Capparidaceæ.

From Manila, Philippine Islands. Presented by Mr. Adn. Hernandez, Director of Agriculture. Received September 6, 1916.

"Seeds of a native fruit known locally as *Cambagat*. This fruit is about the size of a plum, bright red in color, and has an exceedingly fine flavor, somewhat similar to a guava." (*Hernandez*.)

43244 to 43252. TRITICUM spp. Poaceæ.**Wheat.**

From Athens, Greece. Presented by the director of the Royal Agricultural Society. Received September 1, 1916.

43244. TRITICUM MONOCOCCUM L.

Var. *Trimini* (Greek). Spring wheat.

43245 to 43249. TRITICUM DURUM Desf.

43245. Var. *Mavraani* (Greek). Thessaly wheat.

43246. Var. *Rapsani* (Greek). Thessaly wheat.

43247. Var. *Deves* (Greek). Humidity-resisting Thessaly wheat.

43248. Var. *Deves* (Greek). Thessaly wheat.

43249. Var. *Deves* (Greek). Thessaly wheat of the plains.

43250 and 43251. TRITICUM AESTIVUM L.

(*Triticum vulgare* Vill.)

43250. Thessaly wheat of mountainous regions.

43251. Var. *Lapsista*. Macedonia wheat.

43252. TRITICUM DURUM Desf.

Var. *Contoarnaouti* (Greek). Thessaly wheat.

43253 to 43257.

From Colombia. Seeds collected by Mr. H. M. Curran. Received June 24, 1916. Numbered September 11, 1916. Quoted notes by Mr. Curran except as otherwise indicated.

43253. ANNONA MARCGRAVII Mart. Annonaceæ.

"Probably seed of large-fruited anona."

A tree with the trunk, form of the branches, and color of the bark resembling those of an orange, but with different leaves, flowers, and fruit. Its leaves are about 6 inches long, deep green and glossy above, pale green beneath, and tongue shaped. The entirely yellow flower is large and conspicuous, has a sickening sweet odor, and is deciduous. It is followed by the fruit, which ripens in December and January. This fruit, which is conoid in shape and about 5 inches in its greatest diam-

43253 to 43257—Continued.

eter, is green and white mixed or pale green on the outside, and the surface is areoled, with a brown tubercle on each areola. Not until the fruit falls of its own accord is it eaten, and then it is soft, so that it can be peeled with the fingers. The yellowish pulp has an odor like fermented bread dough to which honey has been added, with a sweetish subacid and somewhat bitter taste. The seeds are oval, golden yellow, glossy, smooth, and hard. This tree is a native of Brazil and Venezuela. (Adapted from *Safford, Contributions from the National Herbarium, vol. 18, pt. 1, pp. 25 to 28*, and from *Piso and Marcgrave's description of araticú ponhé, in 1648*.)

43254. CASSIA sp. Cæsalpiniaceæ.

"Ornamental yellow-flowered shrub in low lands. San Martin de Loba, April 16, 1916."

43255. GEONOMA sp. Phœnicaceæ.

Palm.

"*Cecilia* palm. Low, very ornamental, Tierras de Loba, Bolivar."

43256 and 43257. MALVAVISCUS sp. Malvaceæ.

43256. "Low annual, with red flowers, very ornamental, Tierras de Loba, Bolivar. Cultivated also in the Philippine Islands."

43257. "Ornamental, Tierras de Loba."

43258. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. **Yang-tao.**

Plants grown from cuttings sent to the Plant Introduction Field Station, Chico, Calif., by Mr. D. W. Coolidge, Pasadena, and grafted on seedlings of S. P. I. No. 21781. Numbered for convenience in recording distribution.

"The *yang-tao*, a deciduous climber native to Szechwan Province, China, has attracted considerable attention because of the high quality of its fruits and the ornamental value of the plant. The leaves have a plushlike texture and an unusual dark-green color, while their regular spacing and their large size add to the beauty of the vine. The flowers are buff yellow to white, fragrant, often 1½ inches across, and are produced in great abundance. The fruits are ovoid to globose and about 2 inches long. The outside is russet brown and is clothed with villous hairs. The flesh is green, of most excellent flavor, resembling that of a gooseberry, but tempered with a flavor peculiarly its own. The fruit is excellent when fresh and also makes very fine jam and sauce." (*Fairchild*.)

43259. CORDIA sp. Boraginaceæ.

From Guayaquil, Ecuador. Presented by Mr. Frederick W. Goding, American consul general. Received September 5, 1916.

43260. CORDEAUXIA EDULIS Hemsl. Cæsalpiniaceæ. **Yeheb nut.**

From Aden, Arabia. Presented by Mr. A. G. Watson, American vice consul, who obtained the nuts from the Acting Governor of Italian Somaliland at Mogadiscio. Numbered September 12, 1916.

The yeheb is a tree or shrub which has recently been discovered in Italian Somaliland, East Africa. Its seeds, called nuts, have a high food value, containing 21 per cent of cane sugar, 2 per cent of reducing sugars, 13 per cent of proteids, and 37 per cent of carbohydrates. They form an article of commerce and are brought to the coast by caravans and are eaten by the native Dolbahanta Somalis in preference to rice and dates. Though the climate of Somali-

land is not well known, the indications are that where this plant grows, long periods of drought occur, but rains are abundant and regular at certain seasons of the year. Winter temperatures probably do not go below freezing. The plant quickly forms a long taproot, bears when only 4 feet high, has evergreen leaves, which if crushed stain the fingers a magenta color, and grows into a large tree. From the investigations which have been made by the Kew Botanic Gardens the indications are that this plant is worthy of a thorough trial in the arid Southwest, at first in the practically frostless areas, and a special effort is being made to get a large enough quantity of the seeds for an extensive experiment. (See *Kew Bulletin*, 1908, pp. 36-44, 141.)

43261 and 43262.

From Lawang, Java. Presented by Mr. M. Buysman. Received September 6, 1916.

43261. CARICA PAPAYA L. Papayaceæ.

Papaya.

"Seeds of a very large papaya fruit, measuring 40 cm. in length and 16 cm. in diameter; the natives say there are fruits of 50 cm., but I have never seen them." (*Buysman*.)

43262. MEIBOMIA GYRANS (L. f.) Kuntze. Fabaceæ. **Telegraph plant.**
(*Desmodium gyrans* DC.)

"Flowers and fructifies here as if it were indigenous." (*Buysman*.)

An erect, short-lived woody plant known as gorachand, native of moist districts, such as northern Bengal. In moist weather, when the sap is active, a jerky motion of the leaflets, like that of a semaphore, is observed. It is propagated by seed, which should be sown at the beginning of the rainy season and watered when dry. (Adapted from *Woodrow, Gardening in the Tropics*, p. 247.)

"Because of its remarkably sensitive stipules, which gyrate, it has become one of the most valuable of plants for plant physiological investigations. Those of Dr. Chundu Bose are among the most instructive. It can be grown out of doors in the summer in Washington." (*Fairchild*.)

Mentioned as a fodder plant in *Macmillan, Handbook of Tropical Gardening and Planting*, p. 591.

43263 to 43268.

From Manila, Philippine Islands. Presented by Mr. Adn. Hernandez, Director of Agriculture. Received September 1, 1916.

43263. ANNONA CHERIMOLA × SQUAMOSA. Annonaceæ.

Atemoya.

Plants very similar in appearance to the cherimoya; the fruit is small, about 10 ounces in weight, yellowish green, with very thick, tough skin and white tender flesh, juicy, subacid. It has four to seven seeds, darker colored than those of the cherimoya. (Adapted from *Wester, Philippine Agricultural Review*, p. 71, Feb., 1914.)

43264. ANNONA GLABRA L. Annonaceæ.

Pond-apple.

"Known as *Anona* in Mexico; *Cachiman creme* in the French West Indies; *pond-apple* in Florida and the West Indies. Vigorous tree, up to 30 feet in height, the trunk 2 feet in diameter. Leaves ovate-lanceolate, deep green above, pale green beneath, glabrous, persistent. Fruit ovate-conical in shape, 2½ inches long; skin yellowish, sometimes reddish; seeds conical, few. Pulp of a buttery consistency, very sweet, sometimes cloying. Prof. Foex says this is the commonest fruit on the Mexican market (Mexico City) with the exception of the cherimoya. It is not highly

43263 to 43268—Continued.

valued in Florida and is not as hardy as the cherimoya." (W. Popenoe, *Journal of Economic Botany, Pomona College, 1912, p. 296.*)

43265. ANNONA MONTANA Macfad. Annonaceæ.

"Native of Porto Rico and other islands of the West Indies. A small tree, bearing a subglobose, muricate fruit of little value. Introduced into Florida by the Bureau of Plant Industry for trial as a stock for other Annonas." (W. Popenoe, *Journal of Economic Botany, Pomona College, 1912, pp. 296 and 297.*)

"Tree 15 meters high, leaves dark green and very glossy, as though varnished, flowers like those of *Annona muricata*, fruit subglobose, about the size of an orange, pulp white at first, turning yellowish when ripe, seeds yellow or tan colored. Along streams in the mountains usually, but sometimes at sea level." (Safford, *Contributions from the National Herbarium, vol. 18, p. 22, 1914.*)

43266. TRICHOSANTHES QUINQUANGULATA A. Gray. Cucurbitaceæ.

An extensively climbing vine with a smooth-angled stem and 5-lobed membranaceous leaves. The flowers occur in racemes. The native habitat of this plant is in the Mangsi Islands, in the Sulu Sea. (Adapted from Gray, *Botany U. S. Exploring Expedition, vol. 1, p. 645.*)

43267. UVARIA RUFA (Dunal) Blume. Annonaceæ. Banauac.

The fruits of this plant, which is also known as *Susong calabao*, occur in bunches of 18 to 20, are kidney shaped, bright red, and pubescent, with a thin brittle skin and scant, whitish, juicy subacid flesh and many seeds. Ripens in September. (Adapted from P. J. Wester, *Philippine Agricultural Review, vol. 6, no. 7, July, 1913.*)

43268. VERNONIA VIDALII Merr. Asteraceæ. Malasambon.
(*V. arborea vestita* Vidal.)

A small tree, 8 to 10 meters high, with the pale-purple inflorescence and the lower surface of the leaves covered with short hairs which under the lens appear pale yellowish white and very dense. Found in the district of Morong. (Adapted from Vidal, *Revision Plantas Filipinus, p. 160.*)

43269 to 43272.

From Bariloche, Argentina. Presented by Dr. Joseph Vereertbrugghen. Received September 2, 1916.

43269. CHUSQUEA QUILA Kunth. Poaceæ. Bamboo.

A freely branching arborescent plant with the numerous open panicles at the joints. The leaves are distinct and scarcely half an inch wide. It is a native of Chile. (Adapted from Bailey, *Standard Cyclopædia of Horticulture, p. 449.*)

43270. EMBOTHRIMUM COCCINEUM Forst. Proteaceæ. Notro.

"*Randal.* This is a beautiful tree and is giving wood that, here on the spot, is sold by the square inch. It is rather like hazelnut, perhaps nicer." (Vereertbrugghen.)

43271. LITHRAEA MOLLEOIDES (Vell.) Engl. Anacardiaceæ.
(*L. aroeirinha* L. Marchand.)

An evergreen shrub, native of southern Brazil and Argentina, with a height of about 12 feet. The leaves are odd-pinnate, with five leaflets, or

43269 to 43272—Continued.

rarely three, and the flowers occur in panicles 2 to 3 inches long. The fruit is round, about a fifth of an inch across, and of a lustrous whiteness. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 1894.)

43272. MAYTENUS BOABIA Molina. Celastraceæ.

Mayten.

A handsome evergreen shrub, growing to a height of 6 feet, with very smooth, ovate-lanceolate leaves and small flowers in axils. The native country is Chile, where it is quite common, flowering in May. In England it succeeds best trained to the front of the south wall, but survives the winter without even the slightest protection. Perfectly hardy in California as far north as San Francisco and highly valued for ornamental planting; recommended for street and avenue planting; timber exceedingly hard. It is propagated readily from seeds or from suckers. (Adapted from *Edwards's Botanical Register*, vol. 20, pl. 1702, and *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2017.)

43273 to 43280. CICER ARIETINUM L. Fabaceæ.

Chick-pea.

From Seville, Spain. Presented by Mr. Wilbur T. Gracey, American consul, who secured the seeds from Mr. Juan Mateo Gimenez. Received September 1, 1916.

"Chick-peas, or, as they are called in Spain, *garbanzos*, are one of the principal food products of that country, and may be said to be the staple food of the poorer classes. The plant, *Cicer arietinum*, is a species of the bean family largely grown around the Mediterranean regions and in central Asia. The seed, which is considerably larger than a pea, is encased in short, thick, hairy pods, and forms, when roasted, the parched pulse of the East, and for this reason is sometimes known as the *Egyptian pea*. Chick-peas seem to thrive best in more or less arid regions, and for that reason the soil in the Seville consular district seems to be particularly suitable, owing to the intense heat and dryness of the summer months, and this district, which comprises the Provinces of Seville, Cordoba, Cadiz, Huelva, Badajoz, and Caceres, produces over half of the chick-peas grown in Spain. In that territory the sowing is generally done in the month of March, and the crops are usually collected when the plants are perfectly dry, at the beginning of August. It is said, however, that this practice is not to be recommended, as chick-peas which dry in the pods before being cut become exceptionally hard and are difficult to cook, as is not the case if they are collected when the plants become somewhat yellow, before they are absolutely dry, and then are piled in small heaps and left to dry in a granary or well-aired room." (*Gracey.*)

43273. White, hard, from 50 to 52 peas in 30 grams.

43274. White, hard, from 70 to 75 peas in 30 grams.

43275. White, soft, from 50 to 52 peas in 30 grams.

43276. White, soft, from 60 to 65 peas in 30 grams.

43277. Tawny, soft, from 51 to 53 peas in 30 grams.

43278. Tawny, soft, from 60 to 65 peas in 30 grams.

43279. Tawny, soft, from 50 to 52 peas in 30 grams.

43280. Tawny, soft, from 60 to 65 peas in 30 grams.

For an illustration showing a few varieties of chick-peas, see Plate IV.

43281 and 43282.

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens. Received August 17, 1916.

43281. NANNORRHOPS RITCHIEANA (Griffith) Wendl. Phœnicaceæ.

Mazri palm.

A low gregarious shrub, ascending to 5,500 feet in Baluchistan and Mekran, stemless ordinarily, but sometimes with a stem 10 to 20 feet long. The leaves are 2 to 4 feet long, grayish green in color, and are beaten with a mallet to remove the fiber, which is used in making mats, baskets, etc. The fruit is a nearly round 1-seeded drupe. The flowers, leaf buds, and fruits are eaten by the natives, and the seeds are made into rosaries. The reddish brown wool of the petioles is impregnated with saltpeter and used as a tinder for matchlocks, and the whole plant when dried is used for fuel in arid regions. In Europe it grows best in a compost of sandy loam, with good drainage, and is propagated by seeds and offsets. An unheated greenhouse is better than a hothouse. (Adapted from *E. Blatter, Journ. Bombay Nat. Hist. Soc., vol. 21, pp. 72 to 76.*)

43282. PROSOPIS SPICIGERA L. Mimosaceæ.

A deciduous thorny tree, found in the arid zones of the Punjab, Sind, Dekkan, etc. It is easily raised from seed and coppices well. The tap-root is enormously long, in one specimen measuring 86 feet. From the stump of the pruned branches and other scars a gum exudes, similar to gum arabic, which, although worthy of investigation, has not hitherto been used. The bark of the tree is used for tanning. The pods are sometimes used for medicinal purposes, but more often are employed as fodder, and in some localities the poorer classes eat the bark. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 1, pp. 340 and 341.*)

43283. ROSA RUBUS Lev. and Van. Rosaceæ.

Rose.

From Cheshunt, Hertfordshire, England. Plants purchased from Messrs. Paul & Son. Received September 13, 1916.

Wilson No. 666a.

A tall, climbing musk rose, up to 6 meters in height, common everywhere in western Hupeh and eastern Szechwan, China, with densely hairy shoots and leaves and large coarsely dentate leaflets, resembling those of certain species of *Rubus*. The fruit is dull red or dark scarlet, globose, and the peduncles are relatively long and stout. The plant grows up to 1,800 meters altitude. It was first described as *Rosa moschata hupehensis* Pampanini. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, pt. 2, pp. 308 and 309.*)

43284. LITCHI CHINENSIS Sonner. Sapindaceæ.

Litchi.

(*Nephelium litchi* Cambess.)

From Canton, China. Presented by Mr. G. Weidman Groff, Canton Christian College, through Mr. Lau Tai Chi. Received September 5, 1916.

Wai chi variety.

43285. GARCINIA MANGOSTANA L. Clusiaceæ.

Mangosteen.

From Singapore, Straits Settlements. Presented by Mr. J. I. Anderson, director, Botanic Gardens. Received September 12, 1916.

One of the most delicious fruits of the Tropics: The handsome tree is 25 to 30 feet in height, of compact growth, regular in outline, and with dark-green foliage. It comes into bearing at about the ninth year. The rose-pink flowers

are $1\frac{1}{2}$ inches across, and there are two blooming periods each year. The round fruits, about the size of a mandarin orange, are borne from buds produced near the tips of short branches, mainly on the outside of the tree. The rind is thick and the flesh divided into segments much like the orange. The texture resembles a well-ripened plum, and the taste is delicious. In the East Indies it is planted by the natives as a dooryard tree. It is very hard to establish the young trees, which accounts for the small plantings which have been made. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 4, pp. 1889 and 1890.)

43286. CANAVALI OBTUSIFOLIUM (Lam.) DC. Fabaceæ.

From Durban, Natal, Union of South Africa. Presented by Mr. P. van de Bijl, mycologist, Natal Herbarium. Received September 12, 1916.

A creeping perennial bean, called *palang-palang*, *akan-kan-tasi*, etc., with trifoliolate leaves, and bright pink (sometimes white) flowers. The pods are oblong with a few chestnut-colored seeds, which, according to Maiden, are eaten after cooking by natives of Australia. This vine is widely distributed on tropical shores and is useful as a binder for loose sand. (Adapted from *Safford, Useful Plants of Guam*, p. 211.)

43287 and 43288.

From Darjiling, India. Presented by Mr. G. H. Cave, Lloyd Botanic Garden. Received September 11, 1916.

43287. DENDROCALAMUS HAMILTONII Nees and Arn. Poaceæ. Bamboo.

"A tall, freely growing bamboo. Used for building, water pipes, and other purposes locally." (*Cave*.)

This bamboo abounds at about 4,000 feet in the Himalayas, where it attains a height of 40 to 80 feet, with grayish white culms which are naked below and much branched above and which become dull green when old. The culm sheaths are long and stiff, up to 18 inches long on the lower part of large stems, are glabrous and shining within and rough and with scanty patches of brown, stiff hairs or glabrous without. The leaves are variable, up to 15 inches long, and the inflorescence is a huge, much-branched panicle. From this bamboo baskets and mats are made, and the young shoots are eaten as a vegetable. The plant is conspicuous for its bright purple-red flowers. (Adapted from *Gamble, Bambuseæ of British India*, pp. 85 and 86.)

43288. TOONA CILIATA Roemer. Meliaceæ. Toon tree.
(*Cedrela toona* Roxb.)

A large, rapidly growing deciduous tree, 50 to 80 feet high and sometimes 20 feet in diameter, growing chiefly near streams in tropical Himalayan regions; also at low altitudes in western and southern India. The wood obtained from this important timber tree is not eaten by white ants, is durable, and is not liable to warp. It is used for furniture, carvings, and cigar and tea boxes. The bark is used as a tonic, and the flowers are a source of red and yellow dye. The seeds, young shoots, and leaves are given to cattle as fodder. (Adapted from *Watt, Commercial Products of India*, p. 290.)

43289 to 43291. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Canton, China. Presented by Mr. P. H. Josselyn, American vice consul in charge. Received September 15, 1916.

"Chinese peach trees are grown for the most part in the northern Provinces, where the climate is cold. Those grown in Kwangtung Province are inferior in size, color, and flavor to those grown farther north. There are three species of peaches cultivated in this Province—viz, the sweet, the sour, and the bitter." (*F. D. Cheshire, American consul.*)

43289. "*Ying tsui t'ao (eagle's beak peach)*. Very sweet, with a point resembling the beak of the eagle and having a hairy coat. It is grown mostly at Sunchuen, in the Panyu district; Pontang, in the Nanhai district; and also in the Fayun, Sanshui, and Tungkun districts." (*Josselyn.*)

43290. "*Ha mi t'ao (honey-flavored peach)*. Very sweet, slightly round in shape; came originally from Manchuria. This peach is grown for the most part at Fati and Tungka and some other points in the Panyu district." (*Josselyn.*)

43291. "*Suan t'ao (sour peach)*. Grown at various places in Canton, mostly in the hilly districts. Some are imported to Canton from the Shuikwan and Shuitung districts." (*Josselyn.*)

43292. *FICUS HOOKERI* Miquel. Moraceæ.

From Darjiling, India. Presented by Mr. G. H. Cave, Lloyd Botanic Garden, at the request of the superintendent of the Royal Botanic Garden, Sibpur, near Calcutta. Received September 15, 1916.

An entirely glabrous tree, with thinly coriaceous oval leaves up to 11 inches in length, and axillary, depressed, obovate fruits growing in pairs up to 1 inch in diameter when ripe. The fig is not common and ascends to 6,000 feet in Sikkim, the Himalaya Mountains, and the Khasi Hills, India. (Adapted from *King, Annals, Royal Botanic Garden, Calcutta, vol. 1, p. 36.*)

43293 to 43298.

From Bogota, Colombia. Presented by Mr. Jorge Ancizar. Received September 16, 1916.

43293. *ANNONA CHERIMOLA* Mill. Annonaceæ.

Cherimoya.

"The principal fruit cultivated by the aboriginal inhabitants of western South America. Endemic in the Andes, and subtropical rather than tropical in its natural habitat. Fruit with an abundance of slightly acidulous pulp with a flavor somewhat like that of a pineapple. Recommended for planting in southern California in the foothills near the coast." (*Safford.*)

43294. *CARICA CANDAMARCENSIS* Hook. f. Papayaceæ.

"From cold climate." (*Ancizar.*)

"Mountain papaw. A small semiherbaceous tree with a crown of large coarse palmate leaves, native of Colombia and Ecuador, similar to the papaw of the low country, but with fruit only about one-fourth or one-sixth the size of that of the latter. It was introduced at Hakgala Gardens, Ceylon, in 1880, and is now commonly grown in hill gardens for the sake of its fruit, being often found in a seminaturalized state about up-country bungalows. The ovoid angular fruit is in season all the year round: though too acid to be used for dessert, it is very agreeable when stewed, and it can also be made into jam and preserves. When ripe the fruit has a pleasant applelike odor. Propagated by seed." (*Macmillan, Handbook of Tropical Gardening and Planting, p. 191.*)

43293 to 43298—Continued.**43295. CARICA PAPAYA L.** Papayaceæ.**Papaya.**"From hot climate." (*Ancizar.*)

See S. P. I. Nos. 41147 and 43237 for previous introductions and description.

43296. CARYOPHYLLUS JAMBOS (L.) Stokes. Myrtaceæ.**Rose-apple.**(*Eugenia jambos* L.)*Pomarrosa.*

"This fruit, if properly candied, is one of the finest for the purpose. The rose odor and flavor are remarkably pronounced, and it certainly deserves attention." (*Fairchild.*)

The rose-apple is a medium-sized tree, native of India. It is cultivated in southern Florida.

43297. PASSIFLORA LIGULARIS Juss. Passifloraceæ. **Sweet granadilla.**

"An egg-shaped fruit with parchmentlike shell filled with an abundance of sweet juice and many small seeds. Used in tropical America for making sherbets and ices, alone or with the addition of lemon juice or spices. Of easy culture in all the warm localities, growing in the form of a vine from trellises and arbors and desirable not only for its fruit but for its beautiful flowers." (*Safford.*)

43298. PASSIFLORA MALIFORMIS L. Passifloraceæ.**Granadilla.**

"*Curubá.* Fruit defined spheroid, hard shelled. Suitable for packing. Pulp of fine flavor, used for making sherbets. The flowers are beautiful, variegated, and sweet scented, red and white, with blue corona filaments; involucre composed of three ovate-acute bracts joined at the base, larger than the flower itself. The shell of the fruit is sometimes so hard that it must be broken with a hammer. The inclosed pulp has a pleasant grapelike flavor and is used in making cooling drinks and sherbets." (*Safford.*)

43299 and 43300. JUNIPERUS CEDRUS Webb. Pinaceæ. **Juniper.**

From Teneriffe, Canary Islands. Presented by Dr. George V. Perez. Received September 15, 1916. Quoted notes by Dr. Perez.

43299. "A very small one from our island of Palma."**43300.** "A very large one from Teneriffe."**43301 to 43329.**

From Russia. Presented by Mr. W. P. Kotchetkov, Russian Government Agricultural Agency, St. Louis, Mo. Received September 13, 1916. Quoted notes by Mr. Kotchetkov.

43301. AMELANCHIER ROTUNDIFOLIA (Lam.) Dum.-Cours. Malaceæ.(*Amelanchier vulgaris* Moench.)**Service berry.**

"From Tiflis Botanical Garden."

A low tree or shrub, 15 to 20 feet high, with roundish oval leaves which are very downy and pure white beneath when young, becoming nearly or quite smooth at maturity. The few large white flowers, often 1½ inches in diameter, are borne in erect racemes. The fruit is first red, then black, covered with a purplish bloom, and about the size of a black currant. It is edible, but not very palatable. This plant is native in the mountains of central and southern Europe and has been in cultivation for more than 200 years. It has the largest individual flowers of any

43301 to 43329—Continued.

of the cultivated amelanchiars and is very beautiful in late April or May. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 190.)

43302 and 43303. *AMYGDALUS FENZLIANA* (Fritsch) Korsh. Amygdalaceæ.
(*Prunus fenzliana* Fritsch.)

“From Tiflis Botanical Garden.”

A shrublike tree, with long purplish branches and narrowly ovate leaves. The reddish flowers appear before the leaves in few-flowered clusters and are smaller than those of *Amygdalus communis*. The peachlike fruit appears on the usually leafless twigs of the previous season's growth, and the flesh is relatively dry. (Adapted from *Fritsch, Sitzungsberichte Akademie Wissenschaften Wien*, vol. 101, pp. 632 to 636.)

43302. The ordinary form.

43303. Selected form, with larger fruits.

43304. *LAUROCERASUS OFFICINALIS* Roemer. Amygdalaceæ.
(*Prunus laurocerasus* L.)

Cherry laurel.

“From Tiflis Botanical Garden.”

An evergreen shrub of quick growth and wide-spreading habit, over 20 feet in height and twice as much in width, entirely devoid of hairs or down. The young shoots are pale green and the leaves are leathery, dark shining green, of various shapes and sizes up to 6 inches long; each bears two or more glands on its lower surface near the base. The dull white flowers are borne in terminal and axillary racemes and the conical fruits are purplish black, about half an inch long, with conical stones. This plant is a native of eastern Europe and Asia Minor and was introduced in 1629, according to Aiton. It flowers in April, but is not as hardy as the Portugal laurel and is not adapted for planting in ordinary shrubberies. It is admirable for planting as undergrowth in thin woodland. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 240.)

43305. *PRUNUS AVIUM* L. Amygdalaceæ.

Mazzard cherry.

“From Tiflis Botanical Garden.”

A deciduous tree up to 60 feet or more in height, with a trunk sometimes 2 feet and more in thickness and shining bark, which peels horizontally. The young twigs are smooth and the oval leaves are 3 to 5 inches long. The pure white flowers, about 1 inch across, appear in stalkless clusters from the previous year's shoots and from spurlike branches of earlier date. The round, blackish red fruit is about three-fourths of an inch in diameter and is sweet or bitter, but not acid. This tree is a native of Europe, including England, and is one of the parents of the cultivated fruiting cherries, especially the black ones. It should not be confused with *Prunus cerasus* and *P. acida*, from which it differs in being larger, having more coarsely toothed leaves and a fruit which is not acid. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 229 and 230.)

43306. *PRUNUS CERASIFERA DIVARICATA* (Ledeb.) C. Schneid. Amygdalaceæ.
(*Prunus divaricata* Ledeb.)

Persian cherry-plum.

“From Tiflis Botanical Garden.”

A deciduous round-headed tree up to 30 feet in height, with serrate leaves $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long and pure white flowers, often in dense clusters.

43301 to 43329—Continued.

This differs from the true species in having smaller and yellow fruit which is not indented at the stalk. It is said to be a native of the Caucasus, Persia, Macedonia, etc., and was introduced in 1822. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 235.)

43307. PRUNUS MAHALEB L. Amygdalaceæ. **Mahaleb cherry.**

“From Tiflis Botanical Garden.”

A free-growing, deciduous tree up to 30 or 40 feet in height, with a loose, spreading head of branches and the young twigs downy. The glossy green leaves are broadly ovate or roundish, more or less hairy on each side of the midribs, and are 1 to 2½ inches long. The pure white, very fragrant flowers occur to the number of 6 to 10 in racemes. The somewhat egg-shaped, black fruit is about one-fourth of an inch long. This plant, native of central and southern Europe, was introduced in 1714. It flowers in late April and early May, is fast growing, and thrives well in the sandy soil of Kew. It may be propagated by cuttings made of moderately firm young wood and placed in gentle bottom heat; also by layering. The type raised from seed is used as a stock for grafting cherries. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 242.)

43308. PRUNUS MICROCARPA Meyer. Amygdalaceæ. **Syrian cherry.**

“From Tiflis Botanical Garden.”

A deciduous bush, 3 or 4 feet high, with stiff short-jointed branches and downy branchlets. The coarsely serrate, broadly ovate pointed leaves are one-half to 1 inch long, and the rosy pink flowers are produced in clusters of two or three from buds and spurs of older branches. The red or yellow fruit is ovate and nearly half an inch in length. This bush is a native of Asia Minor and in 1890 was introduced into Kew, where it requires the sunniest position possible. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 243.)

43309. PRUNUS PROSTRATA Labill. Amygdalaceæ. **Mountain cherry.**

“From Tiflis Botanical Garden.”

A deciduous shrub, 2 to 3 feet high, with a low, spreading habit and much wider than high. The slender branches are arched, and the twigs are covered with a minute dark down. The pointed, ovate or obovate, sharply serrate leaves are from 1 to 1½ inches long and downy beneath. The bright rose-colored flowers appear singly or in pairs, and the almost stalkless fruit is red and about one-third of an inch long. This shrub is native in the mountains of the Levant and was introduced into Kew in 1802. It needs a sunny position. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 248 and 249.)

43310. PRUNUS SPINOSA L. Amygdalaceæ. **Sloe.**

“From Tiflis Botanical Garden.”

A deciduous, suckering shrub, 10 or 15 feet in height, or in gardens a small tree, with the bark of the young shoots downy and many of the short branches terminated by a spine. The ovate, serrate leaves are sometimes nearly 2 inches long, are downy beneath, sometimes becoming glabrous with age. The pure white flowers appear in March or April, usually singly on the naked wood, and the round fruit, which is half an inch in diameter, is at first blue, then black, and very harsh to the taste. The sloe is native in England and other parts of Europe, as well as in northern Asia. Its slow growth makes it suitable for small gardens.

43301 to 43329—Continued.

The wood is very hard and is prized in rural districts for making hay-rake teeth. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 253 and 254.)

43311 and 43312. AVENA SATIVA L. Poaceæ. Oats.

43311. "Local. From the Kazatchin Experiment Field of the Yenisei Government, Siberia."

43312. "No. 353. Local variety, supposed to be rustproof. From the Tulun Experiment Field, Government of Irkutsk, Siberia."

43313 and 43314. HORDEUM spp. Poaceæ. Barley.

43313. HORDEUM VULGARE PALLIDUM Seringe.

"*Petchora* barley. From the Petchora Experiment Station, Ust-Tsilma, Government of Archangelsk, Russia."

43314. HORDEUM NODOSUM L.

(*Hordeum secalinum* Schreb.)

"In district of Novo-Uzensk on alkali soils. From the Krasnokut Experiment Station, Samara, Russia."

43315 to 43318. SECALE CEREALE L. Poaceæ. Rye.

43315. "Local spring rye. From the Kazatchin Experiment Field of the Yenisei Government, Siberia."

43316. "Local winter rye. From the Kazatchin Experiment Field of the Yenisei Government, Siberia."

43317. "No. 63. Winter rye. Of local forms, well resisting frost and the excess of moisture in the spring. From the Tulun Experiment Field, Government of Irkutsk, Siberia."

43318. "No. 73. Winter rye. Of local forms, well resisting frost and the excess of moisture in the spring. From the Tulun Experiment Field, Government of Irkutsk, Siberia."

43319 to 43327. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(*Triticum vulgare* Vill.)

43319 to 43321. "From the Kazatchin Experiment Field of the Yenisei Government, Siberia."

43319. "*Arnautka*, local spring wheat."

43320. "*Minusinka*, spring wheat."

43321. "*Sibirka*, spring wheat."

43322 to 43327. "From the Tulun Experiment Field, Government of Irkutsk, Siberia."

43322. "No. 22-A. Spring wheat. A representative of the mass selection of local, early, small-seed wheat, supposed to be interesting as material for hybridization for securing early forms."

43323. "No. 31-B. Spring wheat, of interest in hybridization work, the same as No. 22-A [S. P. I. No. 43322]."

43324. "No. 48. Spring wheat, of interest in hybridization work, the same as No. 22-A [S. P. I. No. 43322]."

43325. "No. 324. Spring wheat. A representative of local red ear with large seeds."

43326. "No. 804. Winter wheat. Secured from peasant immigrants."

43327. "No. 806. Winter wheat. Secured from peasant immigrants."

43301 to 43329—Continued.**43328 and 43329.** *ZEA MAYS* L. Poaceæ.

Corn.

43328. "Local. From Tiflis Botanical Garden."

43329. "*Kutais*. From Tiflis Botanical Garden."**43330.** *PASSIFLORA MALIFORMIS* L. Passifloraceæ. **Granadilla.**

From Bogota, Colombia. Presented by Mr. Jorge Ancizar. Received September 16, 1916.

See S. P. I. No. 43298 for previous introduction and description.

43331. *CANAVALI ROSEUM* (Swartz) DC. Fabaceæ.

From Kingston, Jamaica. Presented by Mr. W. Harris, Superintendent of Public Gardens. Received September 18, 1916.

"An undershrub with a creeping ascending stem and shining nearly round leaflets. The racemes are longer than the leaves, the flowers being reddish blue and subcoriaceous. The pods are oblong and shortly acuminate. The plant is found on the sandy shores of Jamaica, and was described by Swartz as *Dolichos roseus*." (*DeCandolle, Prodromus Systematis Naturalis Regni Vegetabilis*, vol. 2, p. 404.)

43332. *SCHINOPSIS LORENTZII* (Griseb.) Engl. Anacardiaceæ.(*Quebrachia lorentzii* Griseb.)**Quebracho.**

From Buenos Aires, Argentina. Presented by Sr. Benito Carrasco, director, Botanic Garden. Received September 18, 1916.

"Tree with very hard wood, unequally pinnate coriaceous compound leaves, flowers in branched panicles; fruit a samara. The products which are extracted from this tree constitute the principal resource of the inhabitants where the tree grows. It is one of the Argentine woods which if exposed to the air, buried in part or entirely, or submerged in water will keep 25 years in good condition, as is attested by experiments made by the Argentine railway with posts, beams, ties, etc. When full grown the logs are made into beams, ties, telegraph poles, etc., and exported in large quantities. The charcoal is very compact and the extract (tannin) is an important product. The sawdust is much used as an astringent." (*Carrasco*.)

43333. *ANNONA CHERIMOLA* × *SQUAMOSA*. Annonaceæ. **Atemoya.**

From Manila, Philippine Islands. Seeds presented by Mr. Adn. Hernandez, Director of Agriculture. Received September 20, 1916.

See S. P. I. No. 43263 for previous introduction and description.

43334 to 43336. *VICIA FABA* L. Fabaceæ. **Broad bean.**

From Barcelona, Spain. Procured through Mr. Harris N. Cookingham, American vice consul in charge. Received September 22, 1916.

"Upon the gathering of the new harvest, I have obtained through a local firm seeds of the horse bean most widely cultivated in Spain. These varieties are commonly produced here for forage and human consumption."

43334. "No. 1. *Mahon* horse or broad bean."43335. "No. 2. Small *Jerez* horse or broad bean."43336. "No. 3. *Seville* horse or broad bean."

43337. BELOU MARMELOS (L.) Lyons. Rutaceæ. Bel.
(Aegle marmelos Correa.)

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Hawaii Agricultural Experiment Station. Received September 25, 1916.

See S. P. I. Nos. 43027 and 43028 for previous introductions and description.

43338. DIMOCARPUS LONGAN Lour. Sapindaceæ. Longan.
(Nephelium longana Cambess.)

From Paget East, Bermuda. Presented by Mr. E. J. Wortley, director, Bermuda Agricultural Station. Received September 27 and 29, 1916.

"The tree from which these seeds were obtained has borne very sparingly." (Wortley.)

43339. HOVENIA DULCIS Thunb. Rhamnaceæ. Raisin tree.

From Chungking, China. Plants presented by Mr. E. Widler. Numbered December 6, 1916.

A tree growing to a height of 40 to 60 feet, native of China, where it is cultivated for the peculiar swollen fruit peduncles, which are much esteemed by the Chinese as a delicacy. (Adapted from a note from *Frank N. Meyer, May 11, 1915.*)

See also S. P. I. No. 40718 for further description.

43340 to 43373. TRITICUM spp. Poaceæ. Wheat.

From Montevideo, Uruguay. Presented by Mr. L. Moreira Acosta, Laboratorio Agronomico. Received September 14, 1916.

"A collection of prize wheats of the First National Exhibit of wheats. These wheats are degenerates, but are adaptable to our climate, which has several drawbacks to the cultivation of cereals, due to their resistance and robustness. You will be able to judge our progress in the cultivation of this cereal, which has only in late years had scientific attention devoted to it by our agricultural experts who have studied in our institutes." (*Acosta.*)

43340 to 43342. TRITICUM DURUM Desf. Poaceæ. Wheat.

43340. No. 1549. Trigo de fideo.

43341. No. 411. Trigo de fideo.

43342. No. 805. Trigo de fideo.

43343 to 43373. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(Triticum vulgare Vill.)

43343. No. 1955. Trigo Americano. 43352. No. 367. Trigo.

43344. No. 1021. Trigo. 43353. No. 43. Trigo Pelon.

43345. No. 1266. Trigo. 43354. No. 851. Trigo Pelon.

43346. No. 1070 or 1570. Trigo. 43355. No. 602. Trigo Pelon.

43347. No. 1095. Trigo. 43356. No. 535. Trigo Pelon.

43348. No. 1381. Trigo. 43357. No. 879. Trigo Pelon.

43349. No. 211. Trigo. 43358. No. 1218. Trigo Pelon.

43350. No. 2007. Trigo. 43359. No. 1991. Trigo Pelon.

43351. No. 551. Trigo.

43360. "No. 1283. Trigo Pelon and Trigo Rietti." These two varieties were received under No. 1283 and the packages did not contain the varietal names mentioned in the letter.

43340 and 43373—Continued.

43361. No. 1487. Trigo Pelon.	43368. No. 517. Trigo Barletta.
43362. No. 1518. Trigo Pelon.	43369. No. 1036. Trigo Barletta.
43363. No. 1093. Trigo Pelon.	43370. No. 1555. Trigo Italiano.
43364. No. 545. Trigo Pelon.	43371. No. 1408. Trigo Italiano.
43365. No. 642. Trigo Pelon.	43372. No. 546. Trigo Fucense.
43366. No. 1525. Trigo Pelon.	43373. No. 1331. Trigo Gironde.
43367. No. 1410. Trigo Barletta.	

43374. PHYTELEPHAS MICROCARPA Ruiz and Pav. Phœnicaceæ.**Corozo nut.**

From Pernambuco, Brazil. Presented by Mr. A. T. Haeberle, American consul general, Rio de Janeiro. Received September 5 and 7, 1916.

This small palm is found native along the banks of streams and on springy hillsides in the Peruvian Andes at an altitude of about 3,000 feet and is closely allied to the one which furnishes the vegetable ivory or *tagua* nut of commerce (*Phytelephas macrocarpa*), although it has smaller fruits. The slender inclined stem, sometimes absent entirely, grows up to 10 feet in length, and the fruits are about the size of a child's head, resembling externally some anonas to such an extent that the Peruvians call them *anon de palma*, but the palm itself is called *yarina*. The thick furrowed rind is tough and is reddish within and may be eaten, having a flavor of melon or moldy cheese. The albumen of the unripe seeds is drunk while still watery or eaten when it becomes fleshy, resembling in taste a coconut in like state, but when quite ripe it is too hard for eating. (Adapted from *description by Richard Spruce, furnished by C. B. Doyle.*)

43375 to 43377. CANARIUM INDICUM Stickm. Balsameaceæ.

(Canarium commune L.)

Java almond.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Gardens. Received September 26, 1916.

See S. P. I. No. 43024 for previous introduction and description.

43378 and 43379.

From Tahiti, Society Islands. Presented by Mr. Edouard Ahnne, president, Chamber of Agriculture, through Mr. Thomas B. L. Layton, American consul. Received September 25, 1916. Quoted notes by Mr. Layton.

43378. COIX LACRYMA-JOBI L. Poaceæ.**Job's-tears.**

"Called locally *Pocpoe*, but known elsewhere as *Job's-tears*. It was introduced into Tahiti some 30 or 40 years ago, it is said, from the West Indies. The young plants are an excellent forage for both cattle and horses, which seem to eat eagerly of the seeds while they are green and tender. It occurs in abundance in the island of Tahiti, though it is also found in much smaller quantities in nearly every part of the colony. The plant prefers and thrives best in damp soil and in localities where the humidity is great."

43379. INDIGOFERA SUFFRUTICOSA Mill. Fabaceæ.**Indigo.**

(Indigofera anil L.)

"A leguminous plant found in the colony. Its distribution is extensive throughout the colony, but it occurs in greatest abundance in the Mar-

43378 and 43379—Continued.

quesas Islands, where it grows wild in the low-lying valleys and along the seashore. Mr. Ahnne has supplied specimens of this plant, not because of its qualities as a forage (since it has no value as an animal food), but because he believed it might be of interest to the Department of Agriculture to learn of its presence here. There are very few forage grasses in the colony, and the land available for pastures is of limited area."

43380 and 43381.

From Dindigul, southern India. Presented by Rev. Willis P. Elwood, American Madura Mission. Received September 27, 1916. Quoted notes by Rev. Mr. Elwood.

43380. CANAVALI GLADIATUM (Jacq.) DC. Fabaceæ. Sword bean.

"The beans are a very good variety and are perennial. A kind of trellis or arbor should be provided for the beans to run on, as they are rampant growers. The pods when young and tender are cooked, and no Golden Wax bean can surpass them in quality. Of course, they are a purely tropical plant, but they would probably grow in the most southern parts of the country."

43381. MAXIMILIANEA GOSSYPIMUM (L.) Kuntze. Cochlospermaceæ.
(*Cochlospermum gossypium* DC.)

"The seeds are of a variety of silk cotton. The trees grow in shallow soil on the top of sloping rocks. The flowers are lemon colored, up to 6 inches in diameter, and are very fragrant. The trees grow at altitudes of 2,000 to 2,500 feet in latitude 10° N. They are never seen anywhere except above rocks."

43382. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Swatow, China. Presented by Mr. G. Hanson, American consul. Received September 28, 1916.

"Cling variety."

43383 to 43385.

From Brazil. Collected by Dr. J. N. Rose, United States National Museum. Received September 25, 1916.

43383. ARAUCARIA BRASILIANA A. Rich. Pinaceæ.

"Rose No. 20427. From Monte Serrat, vicinity of Itatiaya, Brazil; collected July 26, 1915."

A tall evergreen tree, native in southern Brazil, sometimes 100 feet high, with large and nearly globular cones. The wood is used in construction work for turning, ship's masts, cabinetwork, and for matches. The thick, resinous bark yields, by a fermentation process, an agreeable medicinal drink, and the ashes contain much potash; the resin exuded by the bark furnishes by-products useful in the industries and in medicine. The edible seeds produce white and delicate starch. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, p. 346, and from *Correa, Flora do Brazil*, p. 61.)

43384. IPOMOEA sp. Convolvulaceæ.

"Rose No. 19969. From the vicinity of Machado Portella, Bahia, Brazil; collected June 19 to 23, 1915."

43383 to 43385—Continued.

43385. OPERCULINA TUBEROSA (L.) Meisn. Convolvulaceæ.
(*Ipomoea tuberosa* L.)

A perennial, stout-stemmed herbaceous vine, climbing to the tops of the tallest trees. The leaves are large and compound, with seven oblong sharp-pointed leaflets, and the three to six yellow flowers are on a long peduncle. The fruit is a membranous round capsule, about an inch long, containing two or four seeds which are covered with a black tomentum. The tuber is enormous, but not edible, the entire plant being used as a purgative. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises*, pp. 398 and 567.)

43386 and 43387.

Collected by Dr. J. N. Rose, United States National Museum. Received September 25, 1916.

43386. PROSOPIS STROMBULIFERA (Lam.) Benth. Mimosaceæ.

"Rose No. 20974. From the vicinity of Mendoza, Argentina, September 1, 1915. This grows commonly in the Mendoza Desert and is a low shrub not over 12 inches high. Its peculiar screw-shaped pods look like bright-yellow spikes of flowers a short distance away. The plant might prove to be a very good hedge or border plant in western Texas and Arizona. The pods hang on long after the leaves have fallen." (*Rose.*)

43387. TOUNATEA CROCEA (Benth.) Kuntze. Cæsalpiniaceæ.
(*Swartzia crocea* Benth.)

"*Mocutaiba*. From the Jardim Botânico, Rio de Janeiro, Brazil."

A bushy tree, with leaves having three elliptical leaflets and winged petioles. In October the tree is covered with racemes, each consisting of three or four very aromatic yellow flowers. The Brazilian tree is planted in avenues, and the wood is used for interiors and cabinetwork. According to Rodrigues, its native name is *Mocutaiba*, while Correa gives *Mocitahyba*. (Adapted from *Rodrigues, Hortus Fluminensis*, p. 138, and from *Correa, Flora do Brazil*, p. 51.)

43388. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.

From Boscotrecase, Naples, Italy. Presented by Dr. Gustav A. Eisen.
Received September 28, 1916.

"*Fagioli di Cera*. Named on account of their waxy color, and were the best I tasted in Italy." (*Eisen.*)

A bean with a twining stem, which, if supported, will rise to a height of 14 feet. The leaves are smaller than those of the common kidney bean, and the flowers, which are in long spikes and of a deep scarlet color, are larger. The pods are large and rough, and the seeds are purple marked with black, although sometimes pure white. This bean was formerly cultivated for its flowers only and was first mentioned as being edible by the gardener, Philip Miller. (Adapted from *Miller, Gardener's and Botanist's Dictionary*, ed. 9.)

43389. ALEURITES TRISPERMA Blanco. Euphorbiaceæ.

Soft lumbang.

From Los Banos, Philippine Islands. Presented by Mr. F. W. Foxworthy, Manila Bureau of Forestry, at the request of Mr. A. W. Prautch, Muntinlupa. Received September 28, 1916.

"The advantages of *Aleurites trisperma* are that the seeds are easier to crack and that the oil dries quicker than that of *A. moluccana*, according to our Bureau of Science. I have for years written and advocated that our *lumbangs* (*Aleurites*) be utilized instead of allowing unknown tons of seed (especially of *A. moluccana*) to lie and rot; that the world's supply of vegetable oils is growing in importance, as coconut oil is being more and more withdrawn for food." (*Prautch.*)

"From data given by the late William S. Lyon, of Manila, and more recently by the Philippine Bureau of Forestry, it appears that *Aleurites trisperma*, the soft-shelled lumbang, is much less regular and prolific in bearing than *A. moluccana*, the more common, hard-shelled species." (*R. A. Young.*)

For an illustration showing the seeds of the soft lumbang, see Plate V.

43390. RATIBIDA COLUMNIFERA APPENDICULATA Cockerell. Asteraceæ.
(*Rudbeckia columnaris* Sims.)

From Boulder, Colo. Presented by Mr. T. D. A. Cockerell. Received September 14, 1916.

A low, sweet-scented perennial herb, little branched, with pinnatifid leaves and lanceolate leaflets. The cylindrical receptacle is elongated, and in this variety the yellow ray flowers possess long appendages, usually a pair, arising from the throat. The plant is quite hardy, although it is best to put it in a coldframe during the winter. This plant was discovered in Boulder, Colo., July 8, 1916, by Mr. T. D. A. Cockerell and was introduced for the remarkable collarette which it possesses. (Adapted from *Curtis's Botanical Magazine*, vol. 39, pl. 1601, and *Cockerell*, in *Journal of Heredity*, September, 1916, pp. 428, 431.)



SEEDS WHICH ARE THE SOURCE OF A QUICK-DRYING OIL, THE SOFT LUMBANG (*ALEURITES TRISPERMA* BLANCO., S. P. I. No. 43389).

The valuable oil expressed from the seeds of the lumbangs (*Aleurites moluccana* and *A. trisperma*) merits more attention than has hitherto been accorded it. The seeds of the soft lumbang are easier to crack and the oil dries quicker than that of the hard lumbang (*A. moluccana*), which is better known. With the amazing rise in importance of vegetable oils, these trees are bound to prove of increasing value. (Photographed, natural size, by E. C. Crandall, Oct. 15, 1909; P4868FS.)



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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM OCTOBER 1
TO DECEMBER 31, 1916.

(No. 49; Nos. 43391 to 43979.)



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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1916 (NO. 49; NOS. 43391 TO 43979).

INTRODUCTORY STATEMENT.

This inventory is the third to be issued since the declaration of war in April, 1917, and although it covers only 588 numbers it includes a very considerable range of new plants, some of which are not only new to this country as crop plants, but appear to be new to science.

It is my sad task to record in this inventory the death of our agricultural explorer, Frank N. Meyer, whose unique and interesting descriptions of plants, particularly from China, Siberia, and Turkestan, have formed for the past 10 years so important a part of the reading matter of these inventories.

The particulars regarding Mr. Meyer's death will probably never be known. The cabled advices show that he fell overboard into the Yangtze River on the evening of June 1, 1919, from the steamer *Feng Yang Maru* while en route from Hankow to Shanghai and that his body was discovered 30 miles above the town of Wuhu, near Nanking. The facts that his wanderings in search of plants are over and his contributions to these inventories at an end are chronicled with great regret. It is perhaps a significant coincidence that his only contribution to this number is a weeping variety (No. 43791) of the dry-land elm, which was one of his substantial additions to our list of useful trees.

In this inventory are included accounts of some of Wilson Popehoe's interesting discoveries in Guatemala, where, as an agricultural explorer for the Office of Foreign Seed and Plant Introduction of the Bureau of Plant Industry, he spent over 16 months, traveling more than 2,000 miles on horseback over the Guatemalan highlands, in search, primarily, of promising seedlings of the thick-skinned Guatemalan race of avocado.

Perhaps nothing that has occurred in recent years could more strongly emphasize the fact that the horticulturists of southern California and southern Florida are pioneering in the field of tropical horticulture than this search for seedling avocados in Guatemala; and it is a striking spectacle that one country in the very beginning of a plant industry is hunting for promising seedlings in another where that industry, still on a seedling basis, is one of the main sources of food. In Guatemala there does not appear to be a single

orchard of grafted or budded trees, whereas in the United States there is scarcely a seedling orchard to be found.

Mr. Popenoe, whose familiarity with American grafted varieties of avocados enabled him to select commercially promising sorts, inspected thousands of avocado trees growing in dooryards and coffee plantations. After judging the productivity and vigor of the trees, sampling the fruits, and noting the time of their ripening, he photographed both trees and fruits and sent in bud wood for propagating purposes, with a careful pomological description of each variety. In this number he describes the following avocado introductions: Nos. 43476, 43486, 43487, 43560, 43602, and 43932 to 43935. Descriptions of other varieties will be found in other inventories.

To the best varieties established as budded trees in our green-houses and field stations, special names have been given. These names are all taken from the Maya language, the native language of the aborigines of Guatemala, and, as they are not difficult to pronounce, it is believed that they should be retained by American horticulturists. They will serve to identify the varieties as of Guatemalan origin, obviate the difficulty which always arises from an indiscriminate naming by growers, and stand as an acknowledgment on our part of the right of one country to have its gifts to another bear the characteristic names of the country of their origin. The time has gone by when international courtesy should permit us to bring in from a foreign country a new plant variety, strip it of the name it bears in its native home, and give it either the name of its introducer or some commonplace English name.

It is particularly desired to record here our Government's appreciation of the courtesies extended to Mr. Popenoe by the officials and the people of Guatemala. The plants which his expedition brought in can not fail to become more important as the years pass, and the Guatemalan avocado will constitute a most valuable gift from our sister Republic, rivaling perhaps even the gift of the orange from China to Italy or the potato from Peru to Ireland.

With the rapid advance being made in avocado culture in America, Mr. Popenoe's discovery in Guatemala of a new and remarkable and hitherto undescribed relative of the avocado becomes a historical fact of more than usual importance. The anay (*Hufelandia anay*, No. 43432), as it is called, is a tall forest tree of low altitudes and therefore tender. Its fruits are edible, but not comparable to avocados.

The Guatemalan coyó (*Persea schiedeana*, No. 43931), produces fruit that rivals even the avocado in quality, though it is apparently strictly tropical in character.

The chayote, or "mirliton" as it has been called for years by the Creoles of New Orleans, was represented in this country until recently by two, or at most three, rather distinct varieties. Messrs. Cook and

Collins called attention to the existence of several varieties in Guatemala as early as 1901; and it appears from Mr. Popenoe's investigations that this vegetable is not only a most important one to the Guatemalans, but that it is represented by a large number of very distinct sorts. The success of our large plantings in Florida is demonstrating the economic advantages of this remarkable vegetable, which is capable of being kept perfectly in cold storage from November to July. In Guatemala it is called "güisquil," and two main classes are distinguished—the peruleros or small, smooth sorts and the ordinary, large, sutured varieties. Some of these varieties (No. 43398, for example) are free from sutures and consequently easier to pare than the varieties with which we have so far experimented; others have a distinctive flavor (Nos. 43393 to 43401 and 43422).

The cherry has been looked upon by the Europeans living in the Tropics as a fruit limited to the Temperate Zone. It is especially interesting, therefore, to call attention to the cereza of Guatemala (No. 43425), which in its wild state is almost as large as an English Morello, with a meaty texture and the flavor of an oxheart mixed with a trace of bitterness. It is esteemed by the Guatemalans as a fresh fruit and for preserving purposes and deserves to be known throughout the Tropics.

The success of anona culture in Florida through the production of hybrids by Simmonds, Wester, and others, the quickness with which the trees recover when injured by frost, and the delicious character of the fruits make the introduction of the soncoya (*Annona purpurea*, No. 43426) from Guatemala of peculiar interest. This tree, already in cultivation in Guatemala, produces fruit the size of a pummelo, with orange-colored flesh and an aroma resembling that of our native papaw (*Asimina triloba*). It can hardly fail to contribute valuable characters to the hybrid fruits which are evidently coming when the plant breeders really get to work in a comprehensive way on the genus *Annona*.

Sicana odorifera (No. 43427) is a tropical cucurbit which deserves the consideration of our plant breeders because of its remarkable aroma and its striking color. Mr. Popenoe's introductions from Guatemala include a black-fruited one and also a carmine one which is as strikingly beautiful a fruit as the writer has ever seen.

The tropical papaya has come to stay in Florida, and every year more northern visitors learn to like it. The introduction of a very beautiful variety (No. 43428), with a deep reddish salmon-colored flesh of excellent texture, can not fail to interest Florida growers.

A fruit tree such as the nance (*Byrsonima crassifolia*, No. 43429), which is deemed worthy of a place in the dooryards of Guatemala, certainly deserves distribution to other tropical mountain regions.

The manzanilla, or tropical hawthorn (No. 43430) of Guatemala, discovered at Mazatenango, like the Chinese haw brought to our

attention by the late Frank N. Meyer, appears to be a fruit highly prized by the people who grow it. In size and flavor it rivals the Chinese species, *Crataegus pinnatifida*, and the conserve made from it is quite as delicious.

With such materials as these Guatemalan and Chinese introductions to work with, it would seem possible to produce hybrids with our hardy species of *Crataegus* that would prove valuable in our Southern States.

The injerto, or green sapote (*Achradelpha viridis*, Nos. 43439 and 43788), unlike its relative, the sapote, is an inhabitant of high altitudes and therefore may be expected to thrive in Florida and California, although in both places the true sapote has failed. It is reported by Mr. Popenoe as having a better flavor than the sapote.

Three selected hybrids between the Chinese and European pears, produced by Dr. Van Fleet and because of their attractive shape, color, texture, and flavor now considered by him worthy of a wide trial throughout the country to determine their productiveness and their resistance to pear blight, are here described (Nos. 43442 to 43444).

Enterolobium timboura (No. 43455), a characteristic tree of northern Argentina, sent in by Mr. H. M. Curran, is reported as being of such beauty that it is used as an ornamental in Buenos Aires. It is of very rapid growth and is an important timber tree. It is probably hardy enough to grow in California and Florida.

The introduction of seeds of the Paraguayan tea, or maté (Nos. 43456 and 43598), and their easy germination bring up again the whole question of this important crop from which millions of South Americans obtain a beverage corresponding to our tea and coffee, since it contains the same alkaloid. As pointed out by Mr. George F. Mitchell, maté differs from tea and coffee in that the theine which it contains is more easily extracted by hot water, and in the preparation of the drink much less tannin becomes dissolved in the brew than is the case with either tea or coffee. Just why the British Army and the Japanese Army should be tea-drinking armies, whereas the American is essentially a coffee-consuming one, is a question probably traceable to the vagaries of taste.

Pinus merkusii (No. 43462), from Java, has the distinction of being the only true pine known to be a native of the Southern Hemisphere, the so-called Kauri pine of New Zealand being a species of *Dammara*. It may thrive in California and Florida.

Mangifera verticillata (No. 43479), from the Philippines, introduced as of possible value as a stock for the mango, turns out to be a violently poisonous species, producing water blisters like those caused by the poison ivy or the tropical poison wood, *Hippomane mancinella*.

Whether *Persea azorica* (No. 43480), from St. Michaels, will be as refractory as our *Persea pubescens* as a stock or whether crosses can

be produced between it and the avocado are questions for the breeders to decide. It is certain that breeders ought to have a chance to cross these various species under all sorts of conditions.

A remarkable collection of field and garden beans (Nos. 43492 to 43543), particularly from the Northern Circle, Burma, is presented by the Deputy Director of Agriculture at Mandalay.

The pickled mume of Japan (No. 43558), although forming part of the army ration of the Japanese, is as little known in America as though it were produced by a tree growing on some other planet. Interest in it is being aroused mainly because of the remarkable picturesqueness of the tree when in flower, but the value of its pickled fruits deserves our consideration.

Plants of the tussock grass (No. 43564), of the Falkland Islands, are presented by Mr. W. A. Harding, manager of the Falkland Islands Company. It is there considered not only an excellent forage grass, but is used like asparagus for human food, the young shoots having a nutty flavor.

The chufa industry of southeastern Spain is an important one, and the use of the small tubers for the production of the favorite beverage called horchata de chufa has already attracted the attention of American travelers. Consul Sprague gives a description of the culture under irrigation of this peculiar tuber (No. 43578), which contains a very appreciable amount of vegetable fat and a form of mannite. Apparently the main obstacle to growing this tuberous-rooted sedge in this country has been the difficulty of harvesting the tubers. Grown as they are in Spain, this difficulty seems largely to be reduced.

The so-called bonavist bean (*Dolichos lablab*) has begun to attract some attention in Florida as a cover crop for avocado and citrus orchards, making a dense growth and covering the ground well without climbing into the trees. It produces quantities of excellent beans, which when properly cooked are extremely palatable. The variety "Nankinicus" from Georgetown, British Guiana (No. 43594) and the large collection from Burma (Nos. 43505 to 43517) introduced at Mr. Piper's solicitation may bring forward varieties of better quality than the common one now grown in Florida, which came from the Bahamas. The bonavist bean appears to be peculiarly adapted to culture in Florida and deserves the serious consideration of horticulturists there.

A collection of rare and promising shrubs and ornamental trees presented by Prof. C. S. Sargent, of the Arnold Arboretum, includes many hardy and beautiful species from China and Japan collected by Mr. E. H. Wilson and other explorers (Nos. 43675 to 43701, 43703 to 43736, and 43810 to 43925). Sixty-one species of the genus *Rosa* form a part of this collection, and these are at the disposal of the rose breeders of the country both for trial as stocks and for pur-

poses of hybridization. The six species of jasmine (Nos. 43802 to 43807) should stimulate among plant breeders the production of new forms of these sweet-scented plants. This collection also includes such valuable new plants as *Castanea henryi* (No. 43832), a tree closely related to the chinquapin but larger in dimensions, which is already being used by Dr. Van Fleet in his work on the hybridization of the occidental and oriental chestnuts; *Larix potanini* (No. 43851), the most valuable timber tree in China; a low-growing, profuse-fruited mulberry with delightfully acid fruits, *Morus acidosa* (No. 43859); *Prinsepia uniflora* (No. 43863), a new hardy fruiting shrub from Shensi; and eight rare species of *Prunus* (Nos. 43864 to 43871) for the plant breeders of this genus.

Through the kindness of Dr. D. Duncan Main we have secured a quantity of the new species of Chinese hickory, *Carya cathayensis* (No. 43952), which Mr. Meyer discovered near Hangchow several years ago.

Two cultivated species of the genus *Canarium* (Nos. 43959 and 43960) furnish the U-lam or "black olives" and the Pak-lam or "white olives" of Kwangtung Province, China. These two fruits are so much prized that a man who attempted to steal them was tied to the tree he had climbed and periodically beaten by the owner of the tree. The fruits somewhat resemble dried olives when preserved, but have a distinct flavor of turpentine. They are used, however, in immense quantities in the Province of Kwangtung and deserve to be investigated.

The Australian quandong (No. 43423), bearing edible fruits and oily seeds, is likely to thrive in California and Florida and to add another oil-yielding tree to our flora.

The introduction of the ucuúba tree (No. 43424) of the Amazon Valley, which is considered by Huber one of the most useful trees of the region because of its easily worked timber, emphasizes a fact well recognized by foresters that sooner or later systematic culture of tropical timber trees on a vast scale will prove to be a profitable business, just as plantation rubber has become a great plant industry.

The botanical determinations of seeds introduced have been made and the botanical nomenclature revised by Mr. H. C. Skeels, and the descriptive and botanical notes arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Mrs. Ethel H. Kelley.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., September 30, 1919.

INVENTORY.¹

43391. PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.

From Maryland. Presented by Mr. H. A. Ernst, Youngstown, Ohio. Received October 2, 1916.

"Colored Lima beans, which I secured in Maryland several weeks ago. I was informed there that this bean has been grown by three or four generations of the Ernst family in Frederick and Carroll Counties, and they refer to it as the *Ernst* bean. There can be no doubt but that it will produce true to type. The sample is somewhat undersized, owing to the unfavorable season." (*Ernst.*)

43392. ALBIZZIA JULIBRISSIN Durazz. Mimosaceæ.

From Fruitland Park, Fla. Presented by Mr. Louis P. Bosanquet. Received October 2, 1916.

"Seeds of what seems to be a red-flowered form. I have been growing this tree here for a long time. The flowers are much handsomer than the usual form of *Albizzia julibrissin*, and the new growth is a bluer green." (*Bosanquet.*)

See S. P. I. No. 36810 for a description of this species.

43393 to 43401. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote. (*Sechium edule* Swartz.)

From Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received October 6, 1916. Quoted notes by Mr. Popenoe.

"(No. 25a. September 16, 1916.) The chayote, here called *güisquil*, is one of the commonest vegetables in this part of Guatemala and exists in a number of varieties. The following set includes those which have been seen commonly in the market during the past two weeks.

"Two classes of chayotes are distinguished in the markets as *güisquiles* proper and *güisquiles peruleros* or Peruvian *güisquiles*. The former includes practically all of the larger fruits; they vary from green to white in color, some are prickly and some smooth, and the surface is usually roughened, sometimes with deep sutures from base to apex. The second class, *güisquiles peruleros*, includes small fruits, white to green in color, with the surface smooth and free from prickles or soft spines. Both classes are exceedingly abundant in the market."

¹ Each introduction consists of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received by the Office of Foreign Seed and Plant Introduction; and further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names in American literature becomes necessary, the designations appearing in this inventory will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

43393 to 43401—Continued.

43393. "*Güisquiles* proper. Pyriform, light green. This seems to be a very good variety, both because of its large size and its flavor, which is said to be good. It is pear shaped, flattened on both sides, the surface slightly rough and marked by several deep sutures. It is about 6 inches in length and weighs a pound and a quarter. In color it is a pale waxy green, and there are a few spines toward the apex of the fruit. It is the largest variety which I have seen here."
43394. "*Güisquiles* proper. Pyriform, deep green. This variety is slightly smaller than the last [S. P. I. No. 43393], but of the same form. It is 5½ inches long and weighs a pound. The surface is rich green, practically smooth, and without spines."
43395. "*Güisquiles* proper. Small, prickly, white. This is a smaller fruit than the last two [S. P. I. Nos. 43393 and 43394], measuring about 4 inches in length and weighing about 7 ounces. It is obovate to pyriform, flattened on the sides, white, the surface marked with shallow sutures and thickly covered with short, soft spines. While the quality is said to be good, the small size and spiny surface of this variety probably prevent its being considered among the best."
43396. "*Güisquiles* proper. Smooth, round, green. This variety is nearly spherical in outline, flattened on both sides, rich green in color, the surface slightly furrowed and nearly free from spines, having only a few toward the apex. It measures 4 inches in length and weighs about 10 ounces. It is one of the commonest varieties in the market, but is said not to be of the best quality."
43397. "*Güisquiles* proper. Prickly, round, green. Slightly smaller than the last [S. P. I. No. 43396], but of the same form. It measures 3 inches in length and weighs about 7 ounces. The surface is bright green, slightly furrowed, and covered thickly with spines. This seems to be rather inferior."
43398. "*Güisquiles peruleros*. Large white *perulero*. This is the best which I have seen and seems worthy of attention in the United States. Its attractive appearance, the absence of deep sutures (which render its preparation for the table easier, since the sutures make it difficult to pare some of the varieties), and its good quality combine to make this sort worthy of special notice. The variety is large for its class, measuring 3½ inches in length and weighing 9 ounces. It is broadly ovate in outline, very plump, the surface nearly smooth, waxy white in color, and entirely free from spines, as are all the *peruleros*."
43399. "*Güisquiles peruleros*. Small white *perulero*. Much the same shape as the last [S. P. I. No. 43398], but slightly more tapering at the base. It is 2¾ inches in length and weighs about 3 ounces. The surface is similar to that of the large white *perulero*. This and the following two varieties are probably too small to be worthy of much attention in the United States."
43400. "*Güisquiles peruleros*. Light-green *perulero*. Similar in size and shape to the last variety [S. P. I. No. 43399], but differing in color. This one is whitish green and has rudimentary spines, almost too small to be noticed at first glance."
43401. "*Güisquiles peruleros*. Dark-green *perulero*. Slightly smaller than the last two [S. P. I. Nos. 43399 and 43400], but of the same form. The surface is quite smooth and of deep-green color. This is a very common variety in the markets and sells at a very low price."

43402 to 43409.

From Constantinople, Turkey. Received through Mr. Hoffman Philip, secretary of the American Embassy, at the request of Mr. W. Stanley Hollis, consul general, Beirut, Syria, October 3, 1916. Quoted notes by Mr. George M. Young, consular agent, Beirut.

43402 to 43404.² *AMYGDALUS PERSICA* L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

"Peach seeds from Damascus. It is said that the peaches here are usually very good. The seeds are planted about 10 inches deep in the soft rich soil in the month of December and watered every two weeks from February on. Grafts are usually made in the springtime and from other and better varieties on the worst variety, *Kelabi*."

43402. "*Zihri*, summer; thus named from the approximate time of ripening."

43403. "*Shetawi*, winter; thus named from the approximate time of ripening."

43404. "*Kelabi*, large seed."

43405 to 43408.² *PRUNUS ARMENIACA* L. Amygdalaceæ. Apricot.

"Apricot seeds from Damascus. Nothing could be more beautiful than the Damascus gardens of apricot trees in blossom time. Apricots thrive here and attain great perfection. Their taste is excellent. The seeds are planted about 10 inches deep in the soft rich soil in the month of December and watered every two weeks from February on. Grafts are usually made in the springtime and from the other and better varieties on the worst variety, *Kelabi*. The crop of apricots is so abundant and of such excellent quality that its exportation in the form of apricot paste enriches the locality."

43405. "*Beledi*."

43407. "*Kelabi*."

43406. "*Lozi*."

43408. "*Ajami*, meaning Persian."

43409. *AMYGDALUS COMMUNIS* L. Amygdalaceæ. Almond.
(*Prunus amygdalus* Stokes.)

"Almond seeds from Damascus. It might be possible to successfully cultivate these nuts in America. Here they grow well and are eaten everywhere. A little donkey loaded with them may be seen in the streets almost any time during the season. They seem to thrive best on the higher ground. The seed is planted about 10 inches deep in the soft rich soil in the month of December and watered every two weeks from February on."

43410. *ROSA RUBIGINOSA* L. Rosaceæ. Sweetbrier.

From Medford, Oreg. Seeds collected by Dr. B. T. Galloway, of the Bureau of Plant Industry. Received October 9, 1916.

"A wild rose growing on the hillside. A fine plant in Mr. F. C. Reimer's yard at Talent, Oreg. Plant 5 to 6 feet high, forming a dense globose bush, covered with brilliant red fruit, very striking; stems one-half to 1 inch in diameter; leaves slightly scarlet. Mr. Reimer says the fruit hangs on all winter." (*Galloway*.)

² See footnote, p. 11.

43411. AMARANTHUS PANICULATUS L. Amaranthaceæ. Amaranth.

From Cuzco, Peru. Presented by Mr. Albert A. Giesecke. Received October 9, 1916.

"A very special type of the popping variety, which is eaten as a confection or pop corn. It is rare even in Peru." (*Giesecke.*)

43412. ALEURITES FORDII Hemsl. Euphorbiaceæ. Tung-oil tree.

Plants grown at the plant introduction field stations from seed received from various sources. Numbered for convenience in distribution, October 16, 1916.

43413 to 43421.

From Tierras de Loba, Bolivar, Colombia. Seeds collected by Mr. H. M. Curran. Numbered October 17, 1916. Quoted notes by Mr. Curran unless otherwise indicated.

43413. ALIBERTIA EDULIS A. Rich. Rubiaceæ.

"(Nos. 42 and 336.)" A tropical and extratropical shrub found in Central and northern South America, with white flowers. The yellow fruit, which is about the size of a small lemon, is called *Marmeladinha* and the entire plant is called *Puruhy*, both of these being Brazilian names. The fruit is edible and very agreeable in taste. (Adapted from *Mueller, Select Extra-Tropical Plants*, from *Pittier, Plantas Usuales de Costa Rica*, p. 110, and from *Correa, Flora do Brazil*, p. 112.)

43414. BOMBACOPSIS sp. Bombacaceæ.

"(No. 29.)" The species of this genus are from tropical America and are described as medium-sized deciduous trees, either spiny or unarmed, with five to seven leaflets in each leaf. The white or purplish flowers occur in loose terminal panicles. The fruit is a woody capsule, dehiscent, with dense wool inside, and the seeds are subglobose and small. (Adapted from *Pittier, Contributions from the U. S. National Herbarium*, vol. 18, p. 162, 1916.)

43415. BROWNEA BOLIVIENSIS Pittier. Cæsalpiniaceæ.

"(No. 34.) *Arisa*. Low shrub or small tree with red flowers; very ornamental."

43416. CASSIA GRANDIS L. f. Cæsalpiniaceæ.

"(No. 18.) *Cando dunga*. Ornamental tree with pink flowers and large fruit; seeds embedded in edible paste. From the Magdalena River; cultivated in Bolivar."

43417. CEDRELA FISSILIS Vell. Meliaceæ. Cedro.

"(No. 14.)" A tree with pinnate leaves 10 to 15 inches long, densely pubescent beneath, and 18 to 24 opposite, nearly sessile leaflets. The panicles of whitish flowers are longer than the leaves, and the fruit is a dehiscent capsule containing many flat, winged seeds. According to Franceschi, it does better at Santa Barbara than any other species of this genus. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 697.)

43418. CLAVIJA sp. Theophrastaceæ.

"(No. 39.) A low shrub with edible, small, dry, yellow pods. Seed pulp edible."

43413 to 43421—Continued.**43419.** ENTADA POLYSTACHYA (L.) DC. Mimosaceæ.

“(No. 25.) *Bejuco de garza*.” A woody vine, entirely glabrous, with bipinnate leaves and terminal panicles of white almost sessile flowers. Most of these flowers, which are about a millimeter long, fall immediately after opening, only a very few forming fruit. The smooth, slightly curved pod reaches 9 or 10 inches in length. Seeds oval, compressed, with calloused margins. (Adapted from *DeCandolle, Memoires sur la Famille des Légumineuses*, pp. 421 and 434-436.)

43420. PITHECOLOBIUM LIGUSTRINUM Klotzsch. Mimosaceæ.

“(No. 5.) *Payandé*.” A stout tree found in the hot regions of Colombia, called by the natives *payandé* in Magdalena and *gallinero* in Socorro. (Adapted from *Cortés, Flor de Colombia*, p. 144.)

This plant is without spines or thorns, and the leaves are composed of only one pair of leaflets, with oblong-lanceolate pinnæ. The flowers occur in spikes, are slender and glabrous, and the pods are flattened. (Adapted from *Bentham, London Journal of Botany*, vol. 3, p. 213.)

43421. STYLOGYNE RAMIFLORA (Oerst.) Mez. Myrsinaceæ.*(Ardisia ramiflora Oerst.)*

“(No. 46.) May be valuable possibly as a dye plant.”

A woody plant, with dark, terete, smooth branches and papery, short-petioled, entire, oblong-lanceolate acute leaves. The sessile axillary panicles of 5 to 10 flowers are in umbellike clusters at the end of the branches. The fruits, about the size of those of the genus *Piper*, are subglobose drupes. In habit this species is close to *Stylogyne cauliflora* and *S. longifolia*, differing in the inflorescence. (Adapted from *Oersted, in Videnskabelige Meddelelser Naturhistoriske Forening Kjöbenhavn*, p. 132.)

43422. CHAYOTA EDULIS Jacq. Cucurbitaceæ.**Chayote.***(Sechium edule Swartz.)*

From Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received October 14, 1916.

“(No. 26a.) Large white *perulero*. Undoubtedly one of the very best varieties of chayote or güisquil grown in Guatemala. Its attractive appearance, smooth surface, freedom from spines and deep sutures, and its excellent quality make it seem worthy of a careful trial in the southern United States. This variety belongs to the class known as *perulero*, or Peruvian chayote, a group which includes a good many small to medium sized smooth varieties, as distinguished from the *güisquiles* proper, larger fruits, usually with sutures on the surface and often spiny. This large white *perulero* is considered of superior quality, the flavor being very delicate. Owing to the absence of spines and sutures it is very easily prepared for the table.” (*Popenoe*.)

43423. MIDA ACUMINATA (R. Br.) Kuntze. Santalaceæ.*(Fusanus acuminatus R. Br.)***Quandong.**

From Sydney, Australia. Seeds presented by Mr. Fred Turner, of the Linnean Society, through the American consul general. Received October 9, 1916.

"Var. *chrysocarpa*. A rare Australian tree. From an economic point of view the yellow quandong is a fruit superior to the red quandong and grows under precisely similar climatic conditions." (Turner.)

A beautiful evergreen tree, up to 30 feet in height, with opposite lanceolate leaves, mostly 2 or 3 inches long, and rather numerous insignificant flowers appearing on small terminal branches. The reddish globular fruits are about three-fourths of an inch in diameter and are eaten as preserves and jelly and in the dried condition. The kernels, which are spherical, are quite palatable and so full of oil that they will burn entirely away with a clear light. The tree, when full of fruits, is decidedly ornamental. The bark contains a large amount of tannic acid, and the wood is used for turnery, carving, and cabinet-work. In cultivating this tree it is best raised from seeds planted in the places where it is intended that the trees are to grow permanently. This tree is found throughout Australia, except Tasmania and Queensland. (Adapted from F. Turner, *Sydney Morning Herald*, December 16, 1911.)

43424. VIOLA SURINAMENSIS (Roland) Warb. Myristicaceæ. Ucuúba.
(*Myristica surinamensis* Roland.)

From Para, Brazil. Seeds presented by Mr. George H. Pickerell, American consul. Received October 16, 1916.

"Myristicaceæ are more important as timbers than the Annonaceæ, in spite of being represented by a much smaller number of species. The commonest species of the Amazon region are *ucuúba branca* (*Viola surinamensis* Warb.) and *ucuúba vermelha* (*Viola sebifera* Aubl.). The first, especially, is one of the most useful trees of the Amazon region, not only for its easily worked moderately hard wood, but also for its seeds, which furnish a kind of vegetable wax rich in stearin. While the *ucuúba branca* is found principally in the tillable plains, it is not excluded from the uncultivated parts of the country; the *ucuúba vermelha*, which is distinguished by its large leaves and smaller fruits, is a tree of the dry lands and is found principally in the forests. Both these species, especially when young, have a characteristic manner of growth, with slender whorled branches furnished with regularly distichous leaves. The regularity of its branching reminds one of the European conifers. Without doubt other Amazonian species of *Viola* and probably also some species of *Iryanthera* furnish wood which could be utilized, but I have no positive knowledge in regard to this." (J. Huber, *Mattas e Madeiras Amazonicas*, *Boletim de Museu Goeldi*, vol. 6, p. 173.)

The wood of this Brazilian tree is used for interior work and general carpentry. The bark is medicinal and the fruits contain 55 per cent of myristin, a waxy substance of the consistency of beef tallow, used in the trade for candles and soap. (Adapted from *Correa, Flora do Brazil*, p. 70.)

43425 to 43440.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received October 14, 1916. Quoted notes by Mr. Popenoe.

43425. PRUNUS SALICIFOLIA H. B. K. Amygdalaceæ. Capuli.

"(No. 27a. Mazatenango, Guatemala, September 27, 1916.) *Cereza*. Seeds of a wild cherry brought to the market of Mazatenango from the tierra fria, or high lands.

"In the highlands of Guatemala, at elevations of 4,000 to 9,000 feet, occurs, both wild and cultivated, a fruit which possesses more than ordinary interest to those occupied with the cultivation and improve-

43425 to 43440—Continued.

ment of tropical and subtropical fruits. This is the wild cherry, *Prunus salicifolia* H. B. K., commonly known as *cereza* among Spanish-speaking Guatemalans and as *capulin* by the Indians. While not a tropical species, that is, not adapted to the tropical littoral, it is distinctly subtropical in nature and may perhaps be found to thrive in such sections as the extreme southern portion of the United States and similar regions bordering upon the Tropics, as well as in the Tropics themselves, when grown at elevations of a few thousand feet. In its present wild state a fruit of fairly good quality, it would seem that with a little attention on the part of plant breeders it might become a most valuable addition to the list of fruits suitable for moist subtropical countries. Arid or semi-arid sections, such as California, produce European cherries, of the Bigarreau type, to perfection, but as yet there is no cherry for the moist subtropical regions, such as Florida, northern India, and southern Brazil. It is in such regions that attention should be devoted to this species.

"As commonly seen in the Guatemalan highlands, this species is an erect tree, somewhat slender at times, reaching a height of about 30 feet, the trunk stout, occasionally as much as 3 feet thick, and the bark rough and grayish. The young branchlets are dotted with minute grayish lenticels. The leaves, which are borne upon slender petioles three-quarters of an inch long, are commonly $4\frac{1}{2}$ inches in length, $1\frac{1}{4}$ to $1\frac{1}{2}$ inches in breadth at the widest point, oblong-lanceolate in outline, with a long slender tip. The upper surface is dull green, the lower surface glaucous, while the margin is rather finely serrate. The flowers, which are produced from January to May, are white, about three-eighths of an inch broad, very numerous, on slender racemes 2 to 4 inches in length. As many as 15 or 20 fruits sometimes develop on a single raceme, but many drop off before reaching maturity, with the result that two to five ripe fruits are commonly found on each raceme. The season of ripening in Guatemala is from May to September—a remarkably long period. The ripe fruits, which are slightly oblate in form and up to three-quarters of an inch in diameter, separate readily from the short fruit stalks, leaving the green 5-toothed calyx attached to the fruit stalk in every instance. In color the fruit is a deep, glossy maroon-purple. The skin is thin and tender, though sufficiently firm so that the fruit is not easily injured by handling, and the flesh is pale green, meaty, but full of juice. The flavor is sweet, suggestive of the Bigarreau type of cherry, with a trace of bitterness in the skin. The stone is a trifle large in comparison to the size of the fruit, being about the same size as in some of the cultivated cherries of the North, whose fruits are considerably larger than those of this species. Cultivation, however, would probably increase the bulk of the edible portion of the fruit without greatly increasing the size of the stone. It may be remarked that trees of this species which are found "in cultivation" in Guatemala are merely growing in dooryards, and do not receive any of the attention connoted by the word "cultivation" as it is commonly understood by European and North American horticulturists. Pruning is never practiced, fertilizers are not applied, the soil is not tilled, and no water is supplied during the long dry season.

"Pleasant to eat out of hand, this cherry can also be eaten in various other ways, stewed, made into preserves, or used for the manufacture of

43425 to 43440—Continued.

jam. In Guatemala it is most commonly eaten as a fresh fruit or made into a sweet preserve. While, naturally enough, it can not be claimed that this cherry is equal to any of the excellent cultivated varieties of the North, which have been produced by generations of selection and vegetative propagation, it must be said in all fairness that it is a fruit of remarkably good quality for one which has never had the benefit of intelligent cultivation and has been propagated only by seed. When put into the hands of intelligent horticulturists in a region suited to its cultivation and subjected to a few generations of selection it should become a fruit worthy of taking rank alongside its relatives of northern orchards."

For an illustration of this wild cherry, see Plate I.

43426. *ANNONA PURPUREA* Moc. and Sessé. Annonaceæ. **Soncoya.**

"(No. 28a. Seeds procured at Escuintla, Guatemala, September 22, 1916.)

"The *soncoya* (here called *soncuya*, *suncuya*, or rarely *chincuya*) is a remarkable species of *Annona* which appears to be fairly common in the foothills of the western slope of Guatemala. Fruits and trees were seen from Escuintla to Ayutla, on the Mexican frontier, the elevation varying from 200 to 1,200 feet. The *soncoya* is an immense fruit, often larger than a child's head, and covered with short conical protuberances. It is almost perfectly spherical in form, measures about 6 inches in length, and weighs 3 pounds or more. In color it is a light russet brown, sometimes greenish; the protuberances are about one-fourth of an inch long, corky, and sharply pointed. The rind also is corky, about one-fourth of an inch thick, rather pliable, granular, and easily broken. The flesh is pale orange, cottony in texture, rather juicy and with an aroma and flavor almost identical with that of the North American papaw (*Asimina triloba*). The seeds are very numerous, brown, shaped like those of the cherimoya, but much larger, being fully 1 inch long.

"The tree is grown in dooryards and is said also to occur wild in the forests, but up to the present I have only seen it in cultivation. It grows to about the same size as the cherimoya and is of the same form, but the foliage is much larger and makes the tree a striking object in gardens. The fruit is common in markets and fruit stalls and seems to be generally used by the Indians, though an overindulgence in it is said to superinduce *paludismo*, or malarial fever.

"The tree grows on deep loamy, usually moist soils. It probably is suited only to regions with a very warm climate. If it succeeds at all in Florida it will probably be only in the extreme southern end of the State.

"The *soncoya*, which is unknown in cultivation outside of Central America, is a fruit of much better quality than most of the wild *Annonas*. It seems to be especially worthy of attention because of its thick outer rind, which makes it easier to handle than the cherimoya."

43427. *SICANA ODORIFERA* (Vell.) Naud. Cucurbitaceæ. **Melocoton.**

"(No. 29a. Mazatenango, Guatemala, September 23, 1916.) A peculiar melon called here *melocoton* (peach). It is not commonly cultivated and is rarely seen in the market. The fruit is cylindrical, a foot in length, about 4 inches in diameter, with a smooth surface shining black in color. On cutting it in halves lengthwise one finds a narrow zone of flesh next the skin and the rest of the space occupied principally by seeds, which resemble considerably those of the watermelon. The flavor is rather



THE WILD CHERRY OF GUATEMALA. (*PRUNUS SALICIFOLIA* H. B. K., S. P. I. No. 43425.)

The cereza, or wild cherry, is common in the highlands of Mexico and Central America. Its fruits are of pleasant flavor and almost as large as some of the cultivated cherries of temperate regions. Because of its adaptability to subtropical conditions this species merits introduction into the southern United States and similar regions. (Photographed, natural size, by Wilson Popenoe, May 6, 1917, at Antigua, Guatemala; P17279FS.)



A TROPICAL RELATIVE OF THE APPLE. (*CRATAEGUS STIPULOSA* (H. B. K.) STEUD., S. P. I. No. 43430.)

The manzanilla grows wild in the highlands of Guatemala. Several closely allied species are common in Mexico. The fruits are as large as crab apples, deep yellow flushed with red, and attractive in appearance. In preserved form they are popular. They merit cultivation in other regions where conditions are subtropical and not favorable to the apples of the temperate zone. (Photographed by Wilson Popenoe, Nov. 16, 1917, at Antigua, Guatemala; P17422FS.)

43425 to 43440—Continued.

strong and suggests that of a cantaloupe. Not to be recommended for cultivation as a comestible, but may be of interest to those studying the cucurbits. Seeds from one melon."

- See also S. P. I. No. 43440.

43428. CARICA PAPAYA L. Papayaceæ.

Papaya.

"(No. 30a. City of Guatemala, Guatemala, September 20, 1916.) Red-fleshed papaya. A remarkable variety of papaya which seems to be fairly common in the markets here and is said to come from Escuintla. The fruit from which these seeds were taken was cylindrical in form, $13\frac{1}{2}$ inches long by 6 inches thick, pointed at the apex. The flesh was thick, varying from $1\frac{1}{2}$ to $1\frac{3}{4}$ inches, firm, and not at all musky in flavor. It was rather lacking in sweetness, but this may have been due in part to the fact that the fruits are sometimes picked before fully ripe, to permit shipment. The great peculiarity of this variety lies in the color of the flesh, which was a deep reddish salmon. The seeds were oval in form and quite numerous. Other specimens of this same variety which have been seen in the market were similar to the one described but smaller. This interesting form should be tried in connection with the investigations in papaya culture now being carried on in southern Florida."

43429. BYRSONIMA CRASSIFOLIA (L.) H. B. K. Malpighiaceæ. Nance.

"(No. 31a. City of Guatemala, Guatemala, September 20, 1916.) *Nance*, a small tree frequently seen in gardens, especially in villages along the west coast, where it is a common dooryard tree. It is erect, with a slender trunk sometimes dividing near the base and up to 35 feet in height. The leaves are oblate-elliptic to elliptic, acute, 3 to 4 inches long, thickly chartaceous, deep green and glabrous above, covered with thick tawny hairs beneath. The fruits are borne in short terminal racemes 2 to 3 inches long. Individually they are the size of cherries, bright yellow in color when fully ripe. The single rough seed is about the size of a cherry stone. The flavor is acid, sometimes rather strong. The *nance* grows here at elevations from sea level up to 4,000 feet or more, usually on rich loamy soils. It may succeed in California when grown at such places as Santa Barbara which do not experience a great deal of frost, and it ought to succeed in southern Florida."

43430. CRATAEGUS STIPULOSA (H. B. K.) Steud. Malaceæ. Manzanilla.

"(No. 32a. Seeds procured in Mazatenango, Guatemala.) *Manzanilla*, a common fruit in the markets of Guatemalan towns and villages, coming, it is said, from the highlands. I have seen no plants as yet. The fruits look like small apples; they are nearly spherical in form, 1 to $1\frac{1}{4}$ inches in diameter, deep yellow in color, with russet dots and one cheek frequently blushed with red. The thin skin incloses a rather dry, mealy pulp and three irregularly shaped seeds. The flavor resembles that of some of the northern haws, but is, perhaps, better; the fruit is extensively used here for the preparation of dulces of various sorts, such as jams and jellies. This plant would probably succeed both in California and Florida."

For an illustration of the manzanilla, see Plate II.

43431. PERSEA AMERICANA Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

"(No. 33a. City of Guatemala, Guatemala, September 29, 1916.) Seeds of a curious variety of avocado found in the market. It is said to have

43425 to 43440—Continued.

come from Antigua. It appears to belong to the Guatemalan race, but may possibly be a cross between this and some other race. It is not to be recommended as a fruit, but is of interest in connection with the experiments now being carried on to obtain the best stocks for the commercial varieties of avocado. The fruit is unusually small for this region, being no more than $2\frac{1}{2}$ inches in length and frequently not more than 2 inches. It is obovate or broadly pyriform in outline. The surface practically smooth and shining purplish maroon in color. The skin is quite thin, but thicker than is common in the Mexican race. The flesh is pale green, very rich in flavor, but lacking in quantity, due to the very large size (comparatively) of the seed, which has the characteristic closely adhering seed coat of the Guatemalan race."

43432. *HUFELANDIA ANAY* Blake. Lauraceæ.

Anay.

"No. 34a. Mazatenango, Guatemala, September 23, 1916.) Seeds of an interesting species of *Persea* which occurs in this region as a large forest tree and is called *anay* by the natives. It so closely resembles an avocado of the Mexican race in the external appearance of the fruit as to lead one to suspect at first that it must be a form of *Persea americana*, but on a closer examination of the tree and fruit one finds numerous characters which indicate that it must be entirely distinct from *Persea*.

"In clearing the forest for planting coffee, a few large trees are left to provide shade for the coffee plants, and it was due to this fact that we found the *anay*. Two large trees are standing close to the entrance of the finca 'El Compromiso,' about one-half mile from Mazatenango. Others are said to occur in the forest and are known to the natives, who eat the fruits in the same way as avocados and consider them a variety of avocado, '*tipo de aguacate*,' as they say.

"The *anay* is a tall, rather slender tree, reaching a great height in the forest. The two which were seen were between 60 and 70 feet in height. The bark is nearly smooth and of a rich red-brown color, grayish in places. The young branchlets are light brown, finely pubescent. The leaf blades are broadly elliptic to oblong-lanceolate in outline, 8 to 13 inches long, 3 to 6 inches broad, acute to shortly acuminate at the apex, rounded to broadly acute at the base, rigidly chartaceous, bright green and glabrous above (with the exception of the costa and primary transverse veins, which are sparsely hairy), the lower surface being slightly lighter in color and glabrate. The young leaves are softly pubescent below and sparsely hairy above. Petiole $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, terete, slender, but swollen just below the point of union with the lamina. The foliage when crushed has no aromatic odor, like that of the Mexican race. The fruits ripen in August and September. In form they are slender pyriform, sometimes curved and sometimes pointed at the apex. Often the neck is long and sharply defined. The body of the fruit is slightly compressed on two sides. The length varies from 4 to 6 inches. The surface is smooth, glossy, and purplish black. The epicarp is exceedingly thin and membranous and adheres closely to the firm, oily flesh, which is divided into two zones of color, the outer being pale green and the inner, which is of the same thickness as the outer, a greenish cream color. The two zones are more sharply defined than they ordinarily are in the cultivated avocados. The flavor of the flesh is rich

43425 to 43440—Continued.

and bland, like that of a very good avocado, but with a faint suggestion of sweetness. The outer seed coat is developed into a thick husk which may practically be considered an endocarp. Within lies the seed, which is long and pointed, with the inner seed coat, thin and membranous, surrounding the cotyledons closely. While the outer seed coat is extended clear to the base of the fruit, the inner does not always reach the apices of the cotyledons. The embryo lies immediately at the base of the cotyledons, while the avocado has the embryo located some distance above this point. From a practical standpoint the *anay* can not be considered of great value, inasmuch as the flesh is scanty in quantity. If the flesh were more abundant its excellent flavor would make the fruit of great value. The fruit falls to the ground while still hard and requires two or three days to soften and be in condition for eating. The seeds germinate on the ground beneath the trees, and the young plants start off lustily. The larva of some insect attacks the fallen fruits and tunnels through the seeds. Very few fruits found on the ground had not been attacked in this manner. The remarkable similarity of this species to the cultivated avocado and the fact that its fruit is edible and is used by the natives make it a subject of particular interest in connection with the study of the cultivated avocados. It is to be hoped that specimens can be reared and fruited in the United States. The region where the tree is found lies at an elevation of about 1,200 feet and is quite moist. On this account it seems doubtful whether the *anay* will succeed in California. It might be tried in the most protected localities. In southern Florida its chances of success seem good."

For an illustration of the *anay*, see Plate III.

43433. HUFELANDIA ANAY Blake. Lauraceæ.**Anay.**

"(No. 34. Mazatenango, Guatemala.) *Anay*. Young seedlings collected under a large tree in the finca 'El Compromiso,' where the fruit had fallen. See 34a [S. P. I. No. 43432] for a description of this plant."

43434 to 43436. NEPHROLEPIS spp. Polypodiaceæ.**Fern.**

43434. "(No. 36. Mazatenango, Guatemala, September 23, 1916.) *Cola de quetzal* (quetzal's tail). Plants of a fern very common on large forest trees of this region (1,200 feet elevation). It grows usually at some height above the ground. The fronds hang down to a length of 6 feet or more."

43435. "(No. 37. Mazatenango, Guatemala, September 23, 1916.) *Palmito*. Plants of a coarse fern with stout rootstocks, which grows in this region (1,200 feet elevation) on the trunks of large forest trees. The pinnæ are long and rather coarse. Commonly grows closer to the ground than the *Cola de quetzal* (No. 36), being found within 8 to 10 feet."

43436. "(No. 38. Mazatenango, Guatemala, September 23, 1916.) Plants of a small fern found clinging to the trunks of large forest trees, usually close to the ground and in very moist situations."

43437. PASSIFLORA LIGULARIS JUSS. Passifloraceæ. Sweet granadilla.

"(No. 43a. Guatemala, Guatemala, October 7, 1916.) *Sweet granadilla*. Seeds of a species of *Passiflora* cultivated in the highlands of Guatemala, up to elevations of 6,000 feet or more. The fruit is the size of a hen's egg, orange yellow in color when fully ripe, with a thick, brittle

43425 to 43440—Continued.

shell inclosing a large number of small, thin seeds surrounded by white gelatinous pulp. The flavor is delicate, aromatic, almost perfumed, certainly more delicate and agreeable than most of the other Passifloras. This species should be given a more thorough trial in Florida and California than has been accorded it in the past."

For an illustration of the granadilla of Guatemala, see Plate IV.

43438. *RUBUS TIERCKHEIMII* Rydb. Rosaceæ.

"(No. 44a. City of Guatemala, Guatemala, October 7, 1916.) *Mora*. Seeds of a wild species of *Rubus* which is common in the vicinity of San Lucas at an altitude of nearly 7,000 feet. The fruits greatly resemble our cultivated blackberries, being about the same size, with the individual drupelets like those of the blackberry, but slightly lighter in color. The flavor is acid, suggesting both the blackberry and the loganberry. The fruit is gathered from the wild plants and brought by the Indians to the market of the city of Guatemala. It is used for preserves and for stewing."

43439. *ACHRADELPHA VIRIDIS* (Pittier) O. F. Cook. Sapotaceæ.

Green sapote.

"(No. 46a. Palin, Guatemala, October 7, 1916.) *Injerto*, or *green sapote*. Seeds from fruits purchased in Palin, but said to have been grown at Santa Maria de Jesus, between Palin and Antigua. The *injerto* is a common tree in this part of Guatemala. Unlike its near relative, the sapote (*Achradelpha mammosa*), which seems to thrive only at comparatively low elevations in the Tropics, the *injerto* is grown as high as 5,000 or 6,000 feet, and therefore should stand a better chance of succeeding in California and Florida than the sapote, which has so far been a failure in those States. The tree grows to a height of about 40 feet in this region and has long, slender leaves suggesting those of the sapote. The fruits vary in shape, but are commonly round to oval, often pointed at the tip. They are 2 to 3½ inches in diameter, smooth, dull yellow-green in color, sometimes almost dull yellow. The skin is not thick. It adheres closely to the flesh, which is red-brown in color, soft and melting, sweet, with a pleasant flavor somewhat resembling that of the sapote, but better. The large seed (sometimes there are two) is hard and polished, deep brown in color, and easily removed from the pulp."

For an illustration of the green sapote, see Plate V.

43440. *SICANA ODORIFERA* (Vell.) Naud. Cucurbitaceæ. Melocoton.

"(No. 47a. Guatemala, Guatemala, October 7, 1916.) Seeds of a peculiar melon purchased in the market of Guatemala, but said to have come from Escuintla. It is identical with the one sent in under No. 29a [S. P. I. No. 43427] except in color; 29a was shining black, while this variety is bright red. See 29a [S. P. I. No. 43427] for description."

43441. Undetermined. Myrtaceæ.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received October 18, 1916.

"A long black plum, quite good, but a little astringent (some sorts more, some less). It is a stately, very large, dense, evergreen tree; leaves large, dark



THE ANAY, A NEW RELATIVE OF THE AVOCADO. (HUFELANDIA ANAY BLAKE, S. P. I. No. 43432.)

The anay grows wild in northern and western Guatemala. Its fruit resembles an avocado of the Mexican race in general appearance. The flavor is exceedingly pleasant, but the flesh is rather scanty. This species may prove of value in connection with avocado breeding in the United States. (Photographed by Wilson Popenoe, Sept. 23, 1916, at Mazatenango, Guatemala; P16809FS.)



THE GRANADILLA OF GUATEMALA. (*PASSIFLORA LIGULARIS* JUSS., S. P. I. No. 43437.)

Several species of *Passiflora* are commonly known as granadilla in tropical America. The one here shown is grown in the Guatemalan highlands. It is found at high altitudes; hence, it should be sufficiently frost resistant for cultivation in California and Florida. The white juicy pulp is sweet, delicately flavored, and faintly perfumed. (Photographed by Wilson Popenoe, Oct. 19, 1916, at San Lorenzo del Cubo, Guatemala; P16870FS.)



THE GREEN SAPOTE, A RARE TROPICAL FRUIT. (*ACHRADELPHA VIRIDIS* (PITTIER)
O. F. COOK, S. P. I. No. 43439.)

The green sapote, or injerto, is found in the Guatemalan highlands. It is much superior in quality to its relative, the sapote or mamey sapote (*Achradelpha mammosa*). The fruits have orange-brown flesh inclosing one or two large seeds; the sweet, rich flavor resembles that of the sapodilla. The tree will probably succeed in Florida and will certainly grow in Porto Rico, Hawaii, and the Philippines. (Photographed by Wilson Popenoe, Apr. 2, 1917, at San Cristobal, Alta Vera Paz, Guatemala; P17192FS.)



THE LAMAT AVOCADO, FROM THE HIGHLANDS OF GUATEMALA. (*PERSEA AMERICANA* MILL., S. P. I. No. 43476.)

The Guatemalan avocados are remarkable for their fine quality and their habit of ripening in winter. The variety here shown, Lamat, comes from Amatitlan and is typical of the Guatemalan race. The form is attractive. The weight, about 1 pound, is desirable from a market point of view. Since the Guatemalan avocados are hardier than the West Indian varieties heretofore grown in Florida, they will make it possible for Florida to market avocados in quantity during the winter and spring. (Photographed by Wilson Popenoe, Nov. 5, 1917, at the city of Guatemala, Guatemala; P17401FS.)

bluish green; fruits bright yellow till they ripen, when they turn shining black in a short time. Tree loaded with yellow and black fruits for many weeks; very prolific. Said to be very good for sweet preserves." (*Wercklé*.)

43442 to 43444. PYRUS CHINENSIS × COMMUNIS. Malaceæ. Hybrid pear.

Plants grown at the Plant Introduction Field Station, Chico, Calif. Numbered on October 24, 1916, for convenience in distribution.

43442. Hybrid pear, P. I. G. No. 6587, tree 3, row 42. Raised by Dr. W. Van Fleet, in 1907, and presented to the Plant Introduction Field Station, December 22, 1909.

"Fruit large and of attractive pyriform shape, somewhat resembling *Bartlett*, but with a deep red cheek on yellow ground. Flesh fine grained, tender, and juicy, with but few granules, flavor sweet and pleasant, quality very good. Should make an attractive market pear. It is hoped the usual resistance to oriental pear blight will be shown by this hybrid variety." (*Van Fleet*.)

43443. Hybrid pear, from S. P. I. No. 28497, raised by Dr. W. Van Fleet. On account of differences in the fruits this plant and the following have been assigned new S. P. I. numbers.

Mr. J. E. Morrow describes the fruit of this one as follows: "Row 27, tree 7, fruit large, long, and pyriform; rough greenish skin, dotted; stalk $1\frac{1}{2}$ inches long, set between lips, fleshy at the base; calyx large in shallow basin; flesh granular, coarse, juicy; a late pear of excellent size and shape, but very coarse."

43444. Hybrid pear from S. P. I. No. 28497. Mr. J. E. Morrow describes the fruit as follows: "Row 28, tree 4, in the test orchard. Fruit large size, roundish, oblate; very short neck; skin rough, irregular, dotted; basin broad, deep, and furrowed. Flesh coarse, but sweet and juicy. A pear of promise."

43445. PYRUS CALLERYANA Decaisne. Malaceæ. Callery's pear.

Plants grown at the Plant Introduction Field Station, Chico, Calif. Numbered on October 24, 1916, for convenience in distribution.

From a tree grown from seed introduced by Mr. George Compère, who collected it in 1908 in the vicinity of Hongkong, China. The parent tree from which these seedlings came is standing in the yard of Mrs. Lenora Williams, at Oroville, Calif. The plant may be described as follows: This wild Chinese pear is not uncommon in western Hupeh at an altitude of from 1,000 to 1,500 meters and is easily recognizable by its comparatively small crenate leaves and small flowers. This pear maintains a vigorous and healthy appearance under the most trying conditions and might prove to be a very desirable blight-resistant stock. Also the woolly aphid, which attacks other species of pears, has not been known to touch this species. (Adapted from *Compère, Monthly Bulletin, California State Commission of Horticulture*, vol. 4, pp. 313-314, and from *Rehder, Proceedings of the American Academy of Arts and Sciences*, vol. 50, pp. 237-238.)

"The male parentage of these seedlings is naturally uncertain, as the tree at Oroville might have been cross-pollinated by bees flying from European or other oriental pear trees in the vicinity." (*Fairchild*.)

43446. GARCINIA MANGOSTANA L. Clusiaceæ. Mangosteen.

From Dominica, British West Indies. Secured through Mr. Joseph Jones, curator, Botanic Gardens. Received October 24, 1916.

"This delicious fruit is about the size of a mandarin orange, round and slightly flattened at each end, with a smooth, thick rind, rich red-purple in color, with here and there a bright hardened drop of the yellow juice, which marks some injury to the rind when it was young. As these mangosteens are sold in the Dutch East Indies, heaped up on fruit baskets or made up into long, regular bunches with thin strips of braided bamboo, they are as strikingly handsome as anything of the kind could well be, but it is only when the fruit is opened that its real beauty is seen. The rind is thick and tough, and in order to get at the pulp inside it requires a circular cut with a sharp knife to lift the top off like a cap, exposing the white segments, five, six, or seven in number, lying loose in the cup. The cut surface of the rind is of a most delicate pink color and is studded with small yellow points formed by the drops of exuding juice. As you lift out of this cup, one by one, the delicate segments, which are the size and shape of those of a mandarin orange, the light pink sides of the cup and the veins of white and yellow embedded in it are visible. The separate segments are between snow white and ivory in color and are covered with a delicate network of fibers, and the side of each segment where it presses against its neighbor is translucent and slightly tinged with pale green. As one poises the dainty bit of snowy fruit on his fork and looks at the empty pink cup from which it has been taken, he hardly knows whether the delicate flavor or the beautiful coloring of the fruit pleases him the more, and he invariably stops to admire the rapidly deepening color of the cut rind as it changes on exposure to the air from light pink to deep brown. The texture of the mangosteen pulp much resembles that of a well-ripened plum, only it is so delicate that it melts in one's mouth like a bit of ice cream. The flavor is quite indescribably delicious and resembles nothing you know of and yet reminds you, with a long aftertaste, of all sorts of creams and ices. There is nothing to mar the perfection of this fruit, unless it be that the juice from the rind forms an indelible stain on a white napkin. Even the seeds are partly or wholly lacking, and when present are so thin and small that they are really no trouble to get rid of. Where cheap and abundant, as in Java, one eats these fruits by the half peck and is never tired of them; they produce no feeling of satiety, such as the banana and the mango do, for there is little substance to the delicate pulp." (*Fairchild.*)

43447 to 43449.

From El Coyolar, Costa Rica. Seeds presented by Mr. Carlos Wercklé. Received October 20, 1916.

43447. ANNONA MURICATA L. Annonaceæ. Soursop.

"*Guanábana.* From a good-sized fruit with only 17 seeds; a very good variety." (*Wercklé.*)

"One of the most valuable fruit trees of the Tropics. It is grown with especial excellence in Porto Rico and is common in the markets of Key West, whither it is shipped from the islands to the southward. A favorite drink is made from the juice, and the pulp yields excellent jelly, tarts, and preserves." (*W. E. Safford.*)

For further description, see Bailey, *Standard Cyclopædia of Horticulture*, vol. 1, p. 292.

43447 to 43449—Continued.**43448.** *ANNONA SQUAMOSA* L. Annonaceæ.

Sugar-apple.

"Delicious sherbets are made from its custardlike pulp, often with the addition of a little lemon juice, but it is never cooked or made into preserves or jelly, like the soursop. The fruit, when green, as well as the seeds and leaves, is used for destroying vermin; and in the West Indies the crushed leaves, in the form of poultices, are applied to ulcers and malignant sores. The root is a drastic purgative." (*W. E. Safford.*)

For further description, see Bailey, *Standard Cyclopedia of Horticulture*, vol. 1, pp. 294-295.

43449. *ARACHIS HYPOGAEA* L. Fabaceæ.

Peanut.

"*Cacahuete*, the variety from Rio Grande, which produces many pods with four perfect seeds. These seeds are from a very poor crop. Last year on the same land the pods were much larger, with four large seeds." (*Wercklé.*)

43450. *CANARIUM AMBOINENSE* Hochr. Balsameaceæ.

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received October 24, 1916.

This beautiful tree, which grows to a height of about 90 feet, so resembles *Canarium moluccanum* in general habit and in the leaves that the two can scarcely be distinguished, although the fruit is different. The bark is smooth and white. The fruit of this species is oblong, pointed at both ends, with the angles sharp toward the ends and somewhat flattened toward the middle. This tree is found in the island of Amboina, Celebes. (Adapted from *Hochreutiner, Plantae Bogoriensis Exsiccatae*, p. 55.)

43451 to 43461.

From Argentina. Collected by Mr. H. M. Curran. Received October 11, 1916.

43451 to 43453. *ACACIA* spp. Mimosaceæ.**43451.** *ACACIA FURCATA* Gillies.

A glabrous, spiny shrub, with very remarkable stipular thorns, which are nearly of equal breadth throughout until they branch off at the apex into spreading horns. The leaves consist of three pairs of pinnæ, and each pinna consists of seven to nine pairs of pinnules. The white flowers appear in January, and the pods, which contain from five to eight seeds, are rather large, oblong, and flattened. The hard striped coffee-colored wood is not useful. In the Chaco Santa-feción, Argentina, the shrub develops to a considerable size, but when the trunk is large it is usually decayed. This shrub occurs throughout the northern portion of Argentina. (Adapted from *Hooker, Botanical Miscellany*, vol. 3, pp. 206-207, and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, pp. 34, 35.)

43452. *ACACIA PRAECOX* Griseb.

A stout tree, not very tall, well known in northern Argentina on account of its globose heads of aromatic flowers. The leaves consist of three to four pairs of pinnæ and 10 to 24 pairs of pinnules. The wood resembles that of *Ceratonia siliqua* L., or *St.-John's-bread*,

43451 to 43461—Continued.

forms excellent firewood, and is quite abundant. (Adapted from *Grisebach, Plantae Lorentzianae*, p. 88. and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 35.)

43453. ACACIA VISCO Lorentz.

A tree, native of northern Argentina, commonly unarmed, but occasionally with recurved thorns. The leaves consist of three to six pairs of pinnæ; the flowers are sessile. The walnut-colored, striped hard wood is much appreciated on account of its resistance to moisture. It is not abundant and is used for all kinds of carpentry. (Adapted from *Grisebach, Plantae Lorentzianae*, p. 122, and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 36.)

"A timber tree which yields a very hard durable wood. It is a small tree of the dry regions and should be useful for planting in the mesquite areas of the Southwest." (*Curran.*)

43454. CHRYSOPHYLLUM LUCUMIFOLIUM Griseb. Sapotaceæ.

Aguay. A tree found in Misiones and Corrientes, Argentina, with beautiful broad green leaves and axillary or lateral flowers. Only one seed matures in the oval fruit, which is 12 millimeters long. This tree sometimes attains considerable size, and the wood, which is flexible and easily split, is used for firewood and gunstocks. The fruit is edible and very sweet. (Adapted from *Grisebach, Plantae Lorentzianae*, pp. 223-224, and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 96.)

43455. ENTEROLOBIUM TIMBOUYA Mart. Mimosaceæ.

Timbo.

"This is a very important timber tree and one of the most rapid-growing trees of the Tropics. Much appreciated in Buenos Aires as a shade tree. Reaches its best development in tropical forests, but endures cold and drought in a moderate degree." (*Curran.*)

A tree found throughout all northern Argentina and used as an ornamental in Buenos Aires. It is unarmed, and the leaves consist of two to five pairs of pinnæ and ten to twenty pairs of pinnules. The greenish flowers occur in large heads or clusters, and the coriaceous, indehiscent, kidney-shaped pods are fleshy within and contain elliptic seeds. These pods are called *orejas de negro* in Argentina. From the trunks canoes are made, and the beautiful striped wood is used for a great many purposes, such as general construction work and furniture, for paper pulp, and as a source of saponin. The bark and leaves are said to be poisonous to fish; the pods are used to remove stains from clothes, and the seeds appear to be poisonous. (Adapted from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 41, and from *Correa, Flora do Brazil*, p. 70.)

43456. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ.

Yerba maté.

"The Ilex is a plant of humid forest regions, but it will also endure the climate of Buenos Aires. It should be a good plant for Florida and perhaps the coast region as far north as the Cape Fear River, North Carolina. In nature it is a forest plant. In cultivation a light shade is often placed over the plants." (*Curran.*)

A small, bushy, evergreen tree with serrate alternate leaves, a native of Brazil, Paraguay, and the neighboring countries. The leaves are

43451 to 43461—Continued.

roasted and ground to make the Paraguay tea of commerce, which is said to possess the good properties of tea and coffee without their after-effects. In the hospitals of Paris it is used as a stimulant. The yerba groves are located in remote regions and grow best on high land at an elevation of 1,000 to 2,000 feet in soft alluvial soil or soil rich in humus. The seed is very difficult to germinate and without special treatment requires a year before it will come up. An opinion prevails that these seeds will germinate only after being eaten by birds, and a substitute for the gastric juice of the bird has been sought. By a method in use at San Ignacio, Argentina, seedlings have been obtained in five weeks. This plant might be grown in Texas and California. (Adapted from *Friderici, Tropenpflanze*, 1907, pp. 776-783.)

43457. LONCHOCARPUS sp. Fabaceæ.

The species of this genus are either trees or shrubs, with alternate leaves and opposite leaflets. The papilionaceous flowers are white, pink, or purple, and occur in simple or branched racemes. The membranous or coriaceous pods are flat and dehiscent, containing one to four, or rarely more, flat kidney-shaped seeds. An indigo is said to be obtained from this genus, but it is not known in the trade and is little cultivated. (Adapted from *Humboldt, Bonpland, and Kunth, Nova Genera et Species*, vol. 6, pp. 182, 333, and from *Bailey, Standard Cyclopædia of Horticulture*, vol. 4, p. 1904.)

43458. PIPTADENIA EXCELSA (Griseb.) Lillo. Mimosaceæ.

(*P. communis excelsa* Griseb.)

"An important timber tree; also planted as a shade tree in Buenos Aires." (*Curran.*)

An unarmed tree, almost 100 feet high, with 15 to 20 pairs of leaflets in each leaf and spikes of flowers 2 or 3 inches long. The pods are linear. The rather thin bark is not used in tanning, as is that of the other species. The rosy wood, which resembles that of *Piptadenia macrocarpa*, is tough and straight grained and is used by the carpenters of Jujuy for various kinds of work. It is indigenous to the northern part of Argentina and is not exported to the south. (Adapted from *Grisebach, Plantae Lorentzianae*, p. 121, and from *Venturi and Lillo, Contribución al Conocimiento de los Árboles de la Argentina*, p. 48.)

43459. PIPTADENIA MACROCARPA Benth. Mimosaceæ.

"Used the same as above number." (*Curran.*)

An unarmed tree, native of Brazil, with grayish tomentulose twigs and branches and 10 to 25 pairs of pinnæ, each with 20 to 40 pairs of pinules, hardly 2 millimeters long. The flowers occur in peduncled heads in the axils of the leaves, sometimes at the ends of the branchlets. The pods are half a foot long and more than an inch wide, with thickened margins. (Adapted from *Hooker's Journal of Botany*, vol. 4, p. 341, and from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2647.)

43460. SACCELLIUM LANCEOLATUM Humb. and Bonpl. Boraginaceæ.

A tree, 2 to 4 meters in height, with many branches, and a trunk 3 decimeters in thickness. The alternate, lanceolate leaves are 10 to 16 centimeters in height, and the terminal racemes of inconspicuous dioecious flowers resemble minute bouquets. The fruit is a small drupe. The wood of this tree is about the same in color and texture as that of

43451 to 43461—Continued.

the ash (*Fraxinus excelsior*). This tree is found in the Peruvian Andes on the tributaries of the River Guancabamba. (Adapted from *Humboldt and Bonpland, Plantas Equinoxiales*, pp. 41-44, pl. 13.)

43461. SCHINOPSIS LORENTZII (Griseb.) Engl. Anacardiaceæ.

(*Quebrachia lorentzii* Griseb.)

Quebracho.

A tall timber tree, native of central South America, attaining a height of 50 to 75 feet and a diameter of 2 to 4 feet. The leaves are composed of 10 to 15 pairs of pinnae and the flowers occur in panicles. The fruit is a dry, indehiscent samara. The heartwood of this tree is one of the hardest, heaviest, and most durable timbers in the region of its occurrence. It contains a large amount (20 to 24 per cent) of tannin, which acts as a preservative, and it is used extensively for railroad ties, wharves, dry docks, fence posts, etc. The wood is whiter than that of the *Quebracho colorado* of the Chaco. (Adapted from *Mell, Forest Service Circular 202*, and from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 3.)

43462. PINUS MERKUSII Jungh. and DeVr. Pinaceæ.

Pine.

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received October 16, 1916.

This tree, which is the only pine found south of the Equator, attains a height of 100 feet and forms a flat, umbrellalike crown. It is found in Burma, Borneo, Sumatra, and the Philippines, chiefly at elevations of 3,000 to 4,000 feet. The leaves are in clusters of two, the cones are usually in pairs, and the seeds are small, much shorter than the unequal-sided wing. The wood is very resinous, and the trunks are used for masts and spars. (Adapted from *Brandis, Indian Trees*, p. 691, and from *Mueller, Select Extra-Tropical Plants*, pp. 393-394.)

43463 and 43464.

From the Himalaya Mountains. Collected by Mr. R. E. Cooper and presented by Mr. A. K. Bulley, Bees Ltd., Liverpool, England. Received October 16, 1916. Quoted notes by Mr. Cooper.

43463. CHENOPODIUM sp. Chenopodiaceæ.

(Cooper No. 5259.) "This plant grows in sandy soil at an elevation of 10,000 feet and forms a rosette of red-fruited sprays about 11 inches in diameter."

43464. DELPHINIUM sp. Ranunculaceæ.

Larkspur.

(Cooper No. 5355.) "This plant grows at an altitude of 10,000 feet and was in fruit only under moist gravel banks."

43465. CHORISIA INSIGNIS H. B. K. Bombacaceæ.

From Guayaquil, Ecuador. Presented by the American consul, through Mr. L. H. Dewey, of the Department of Agriculture. Received November 9, 1916.

"This is one of the silk-cotton trees, although not of such economic importance as the true kapok. The silk cotton is very nice and useful for stuffing pillows. The trunks of the young trees are spiny, but shed the spines with advancing age. I have seen trees of this species in the foothills of Salta with a diameter of 2 meters 40 centimeters, looking like immense onions. Some of the inhabitants there use the partly hollowed trunks of the live trees around

their houses for storing their cured meats and other supplies. Here in Tucuman the *Chorisia* is used quite a good deal for planting along suburban roads and avenues, and while it is not as beautiful a tree as some it is striking and interesting enough. The large flowers are yellowish white, the pods green at first, changing later on to dark brown. The tree resists quite a good deal of frost, about as much as the jacaranda, for instance, but probably can not be grown as far north as Washington. In California and the Gulf States it should do quite well. This species is quite scarce." (*E. F. Schultz.*)

43466 to 43470.

From the Himalaya Mountains. Collected by Mr. R. E. Cooper and presented by Mr. A. K. Bulley, Bees Ltd., Liverpool, England. Received October 16, 1916. Quoted notes by Mr. Cooper.

43466. *EREMURUS HIMALAICUS* Baker. Liliaceæ.

(Cooper No. 5196.) "This plant, which was found growing in a thin, turfy meadow over sand on river banks in extremely dry situations, is said to occur in only one place, Gonola, Labane, a stage below Kylum. It is 3 or 4 feet high, and the very showy white flowers appear in May."

43467. *EREMURUS HIMALAICUS* Baker. Liliaceæ.

"Probably the same as No. 5196 [S. P. I. No. 43466]."

43468. *IRIS* sp. Iridaceæ.

Iris.

(Cooper No. 5357.) "This dwarf iris grew on sloping turf at an altitude of 10,000 to 12,000 feet. Its leaves are thin and narrow."

43469. *SILENE* sp. Silenaceæ.

(Cooper No. 5312.) "This plant grew to a height of 2 feet in the moist turf of a cornfield and bore white flowers."

43470. *THYMUS* sp. Menthaceæ.

Thyme.

(Cooper No. 5265.) "This plant grows on moist shady slopes at an elevation of 10,000 feet. The flowers are small and yellow, and the fruits are very hairy."

43471. *BOUGAINVILLEA* sp. Nyctaginaceæ.

Bougainvillea.

From Georgetown, Demerara, British Guiana. Cuttings presented by the Department of Science and Agriculture. Received October 3, 1916.

An attractive crimson-flowered bougainvillea, originally from Colombia, and now commonly cultivated in several of the British West Indian islands and also in British Guiana. In the latter place the Department of Science and Agriculture has been carrying on experiments with the culture of this ornamental. The crimson bougainvillea has been successfully raised from cuttings and flowers twice a year in British Guiana, once in April or May and once in October or November. (Adapted from note in *Agricultural News*, July 1, 1916, vol. 15, p. 220.)

43472 to 43474.

Collected by Dr. David Griffiths and grown at the Plant Introduction Field Station, Chico, Calif. Plants numbered October 27, 1916.

43472 and 43473. *LEPARGYRAEA ARGENTEA* (Pursh) Greene. Elaeagnaceæ.] (*Shepherdia argentea* Nutt.) **Buffalo berry.**

"Secured near Pierre, S. Dak. The buffalo berry is a native of the Missouri River valley and westward. In limited localities it has played

43472 to 43474—Continued.

a rather important rôle as a jelly fruit. It grows into a large shrub or small tree, resembling rather closely in leafage the so-called Russian olive belonging to the genus *Elaeagnus*. The fruit is about the size of a currant and varies in color from yellow to red. It is not at all palatable until very late in the season, after it has partly dried so that the skin is wrinkled and presents a withered appearance. To most tastes it is not palatable at all in the raw state, but it makes a jelly of very superior quality. The fruit is gathered by shaking the trees very late in the season and catching the falling berries upon sheets. The yellow form is usually preferred to the red for culinary purposes." (*Griffiths*.)

43472. Red-berried form.

43473. Yellow-berried form.

43474. *BERBERIS FREMONTII* Torr. Berberidaceæ.

Barberry.

"From Lyford and San Saba, Tex. A native of southern and central Texas. Like the other species of the genus, it has ornamental value. In its native regions the berries are used for culinary purposes. In localities where the species is very abundant jellies are prepared and offered for sale on the markets. The species is very variable." (*Griffiths*.)

43475. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

From Santiago, Chile. Seeds procured through Mr. W. A. Shelly, at the request of Mr. W. F. Wight, of the Bureau of Plant Industry. Received October 16, 1916.

"*Palta*. I am sending several of the varieties found here in Chile." (*Shelly*.)

43476. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received October 20, 1916, to June, 1917.

"(Nos. 48, 55, 82, 126, and 148. Avocado No. 3.) *Lamat*.³ A variety combining unusual productiveness with good size, attractive appearance, and good quality of fruit. In addition, it seems to ripen earlier than many other avocados, which suggests it for trial as a winter-ripening variety in California. It has no claim to unusual hardness, since it is grown at an elevation where frosts are not experienced.

"The parent tree is growing in the chacara of Angel Samayoa, in the town of Amatitlan (altitude 3,872 feet). It stands close to the corner of a small field in which tomatoes and maize are planted annually. The soil is a loose sandy loam, apparently of excellent fertility and considerable depth. The age of the tree is not definitely known, but judging from its size it is probably 5 or 6 years old. It stands about 20 feet high, with an erect crown, extending almost to the ground, about 10 feet broad, and well branched. The trunk is

³ This and other varietal names for Mr. Popenoe's Guatemalan avocados have been taken from the Maya language, which in various dialectic forms is the one spoken in those parts of Guatemala from which these avocados have come. It has been thought that the use of these names, many of which have appropriate meanings, would serve to distinguish these varieties from others grown in the United States, as well as to indicate their origin.

6 inches thick at the base. The tree shows every indication of being a strong, vigorous grower, and its branches are stout and shapely and not so brittle as in many weak-growing varieties. The bud wood furnished by the tree is quite satisfactory; the growths are of suitable length, and the eyes are strong and well developed, showing no tendency to drop at an early date, as they do in some varieties.

"During the period in which this tree was under observation^{*} it showed a peculiarity in flowering which was not noticed elsewhere in Guatemala. In November, 1916, flowers were produced and a few fruits set. Since a heavy crop was produced in 1916, it was thought that the fruits set from the November bloom were all that would be developed during 1917, but in January the tree flowered again and set a very heavy crop of fruit.

"The crop produced in 1916 amounted to over 100 fruits, which can be regarded a heavy crop when the size of the fruits and the small size of the tree are considered. The crop for 1917 promises to be considerably larger. In 1916 the fruits were practically all picked in November, at which time they were considered by the owner to be mature.

"The fruit is broadly oval, quite uniform in shape, with a smooth green surface when ripe. The weight varies from 14 to 20 ounces. The skin is about as thick as in the average variety of the Guatemalan race, which is one-sixteenth of an inch or slightly more. The flesh is free from fiber, clear, of good texture, and pleasant flavor. Specimens sampled in November, 1916, were not as rich as would be desired, but it may reasonably be assumed that they would have been much better if they had been left on the tree two or three months longer. Perfectly ripened specimens of this variety have not been tested; hence, the quality of this fruit when at its best must remain somewhat in doubt until it comes into bearing in the United States. The seed is comparatively small and always tight in its cavity.

"Form uniformly oval; size above medium to large, weight 14 to 18 ounces, at the time up to 20 ounces, length $4\frac{1}{2}$ inches, greatest breadth $3\frac{1}{2}$ inches; base rounded, with the stem inserted obliquely without depression; stem stout, about 6 inches long; apex rounded, with the stigmatic point to one side and slightly elevated; surface nearly smooth, slightly undulating and somewhat obscurely ribbed, deep green in color, almost glossy, with a few scattering large yellowish green dots; skin thick, slightly over one-sixteenth of an inch at base, nearly one-eighth of an inch at apex, coarsely granular, brittle; flesh cream color, pale green near the skin, of fairly rich flavor, and free from fiber or discoloration; quality very good; seed rather small in comparison to the size of the fruit, almost spherical, about $2\frac{1}{2}$ ounces in weight, with both seed coats adhering closely to the nearly smooth cotyledons, tight in the seed cavity." (*Popenoe*.)

For an illustration of this avocado, see Plate VI.

43477. CHAYOTA EDULIS Jacq. Cucurbitaceæ.
(*Sechium edule* Swartz.)

Chayote.

From Santo Domingo, Dominican Republic. Received through Mr. Carl M. J. von Zielinski, American vice consul in charge, October 19, 1916.

"Information from reliable sources states that the cultivation of this plant is very simple. It should be planted in a humid soil, preferably where there is plenty of shade. Its growth is said to be wonderful, and after 90 days it has been known to produce over 100 fruits. There are two kinds of *tallote* found in this country, but the difference is said to be only in the color of the skin, which may be either white or green. The fruit is very much liked by the

natives and is prepared in many ways. It is used in soup and meat dishes and also in the manufacture of candy. Native physicians prescribe it not only as food for children and old people, but the leaves after boiling are used externally to cure rheumatism. Animals are very fond of the fruit as well as the leaves." (*Von Zielinski.*)

43478. BELOU MARMELOS (L.) Lyons. Rutaceæ. Bel.
(*Aegle marmelos* Correa.)

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Agricultural Experiment Station. Received October 23, 1916.

This plant is the *bael tree* of India, ascending to 4,000 feet above the sea, and found here and there both wild and cultivated throughout India and also Burma. It finally attains a height of 40 feet. The leaves are trifoliolate and deciduous, and the greenish yellow, nearly globular fruit varies from 2 to 6 inches in diameter, being smaller in the wild trees. The hard shell is filled with a pale orange aromatic pulp, in which occur 10 to 15 long, narrow cells containing the seeds embedded in transparent gum. The Hindus are very fond of this fruit, which in its green state is a specific for dysentery. It is now being tested in several places in the United States with a view to introduction. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, pp. 222, 223*, and from *Mueller, Select Extra-Tropical Plants, p. 20.*)

43479. MANGIFERA VERTICILLATA C. B. Robinson. Anacardiaceæ. Baño.

From Manila, Philippine Islands. Presented by the Bureau of Agriculture. Received October 24, 1916.

A very large tree, with gray bark and extremely poisonous juice. Missionaries in the Province of Moro, Philippine Islands, where this plant is native, say that if one seeks shelter from rain beneath this immense tree the water dripping from the leaves will cause him to have blisters and boils, and if the juice comes in contact with an open cut death results. The leaves are in whorls of four, and the nearly oval fruits are about 6 inches long and 4 inches in diameter, with white flesh containing a seed about 4 inches long. For detailed description of the fruit, see S. P. I. No. 34431. (Adapted from *Robinson, Philippine Journal of Science, sec. C, Botany, vol. 6, pp. 337-339.*)

43480. PERSEA AZORICA Seubert. Lauraceæ.

From St. Michaels, Azores. Presented by Mr. William Bardel, American consul. Received October 24, 1916.

"Seeds collected near Lagoa, at an altitude of 500 feet, and at Furnas, on a mountain rising about 1,800 feet above the level of the sea." (*Bardel.*)

A medium-sized tree, found in the forests of all the islands of the Azores, especially in the island of Pico, at altitudes ranging from 1,000 to 2,500 feet. The younger leaves are hairy margined, and all the leaves are generally oval with wedge-shaped bases. The fruits are quite small and egg shaped. (Adapted from *Seubert, Flora Azorica, p. 29, pl. 6.*)

43481. GARCINIA MANGOSTANA L. Clusiaceæ. Mangosteen.

From Peradeniya, Ceylon. Presented by Mr. C. Driberg, secretary, Ceylon Agricultural Society. Received October 30, 1916.

"A moderate-sized conical tree, with large leathery leaves, indigenous to Malaya. Its globular purplish brown fruit, about the size of an apple, is

famed as one of the most delicious fruits of the Tropics, some writers describing it as 'perhaps the most luscious fruit in the world, partaking of the flavor of the strawberry and the grape.' The delicate white juicy pulp surrounding and adhering to the seed is the part eaten. In striking contrast to it is the dense, thick, reddish rind, containing tannic acid and a dye. The tree is of very slow growth and does not usually come into bearing till about 9 or 10 years old. The essential conditions for it are a hot climate and deep, rich, well-drained soil. Propagation is usually by seed, but may also be effected by gootee or layering. Sow seeds in pots under cover. The plants are of very slow growth, taking about two years to become large enough for planting out, being then only about 12 inches high." (*Macmillan, Handbook of Tropical Gardening and Planting*, pp. 164 and 165.)

See S. P. I. No. 43446 for further description.

43482. SIMABA CEDRON Planch. Simaroubaceæ. Cedron.

From Cristobal, Canal Zone. Presented by Mr. O. W. Barrett. Received October 18, 1916.

"Mr. Sandberg believes that these nuts are high in tannic-acid content and also possess some good medicinal qualities, since they are used in several native remedies about here. The tree reaches some 15 to 25 feet in height and bears great quantities of these brownish fruits, consisting of the large seed and a layer, 5 to 15 mm. thick, of reddish yellow flesh, bitter and acrid." (*Barrett.*)

A short, erect, graceful tree with a trunk about 6 inches in diameter and large, alternate, pinnate leaves, composed of 20 or more pairs of leaflets. The white flowers occur in long racemes, similar to those of *Simaba trichilioides*. The oval fruits, which are 6 cm. (2½ inches) long, are edible. A bitter principle is found throughout the plant, but only the seeds are used medicinally. These seeds are inodorous but intensely bitter and are used as a remedy for snake bite, hydrophobia, and in treating fevers and dysentery. If more than 25 or 30 grains are given in a single dose, death may result. This tree is found in Colombia, Panama, and Costa Rica. (Adapted from *Héraud, Nouveau Dictionnaire des Plantes Médicinales*, pp. 563-565, and from *Hooker's Journal of Botany*, vol. 5, p. 566.)

43483 and 43484.

From Villahermosa, Tabasco, Mexico. Presented by Mr. G. Itié, director, Agricultural Experiment Station. Received October 24, 1916. Quoted notes by Mr. Itié unless otherwise stated.

43483. ACROCOMIA MEXICANA Karw. Phœnicaceæ. Cocoyol palm.

"*Coyol de sabana* or *cocoyol*. The inhabitants use the fruit in making a dessert, cooking it with brown sugar. Rings are made from the shells."

A prickly palm, about 20 feet high, with a brown woolly trunk up to 1½ feet thick and terminal leaves from 6 to 8 feet in length. The sheathing bases of the leaves are armed with long black spines, and the spathe is very spiny. The yellow flowers are very odorous, and the round fruits are about an inch in diameter. This palm is found in the cooler regions of Mexico up to 3,000 feet above the sea and is said to be hardy at Santa Barbara, Calif. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 19, from *Bailey, Standard Cyclopedia of Horticulture*, vol. 1, p. 211, and from *Martius, Historia Naturalis Palmarum*, p. 285.)

43483 and 43484—Continued.**43484.** *ATTALEA* sp. *Phœnicaceæ*.**Corozo palm.**

"*Corozo*. Very abundant, but little exploited because of the difficulty of breaking the shell."

"An undescribed species, closely related to the Cohune, or Corozo palm (*Attalea cohune*), of the Caribbean coast region of Central America; it differs from the Cohune palm in the smaller and more rounded fruits and the thinner and more brittle shell of the seed. The seed contains a single kernel, smaller than that of the Cohune. The kernels contain a high percentage of oil, said to be the equal of coconut oil and suitable for the manufacture of similar products. The palm is said to grow in great abundance in the vicinity of Mazatlan, Sinaloa, Mexico. The kernels are exported in considerable quantities from Mazatlan to the Pacific ports of the United States for oil extraction." (*C. B. Doyle*.)

43485 to 43487.

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 2, 1916. Quoted notes by Mr. Popenoe.

43485. *ANNONA CHERIMOLA* Mill. *Annonaceæ*.**Cherimoya.**

"(No. 49. Duenas, Departamento de Sacaterpequez, October 18, 1916.) Bud wood of an unusually choice variety of cherimoya, or *anona* as it is called here, from a garden in the village of Duenas, about 10 kilometers from Antigua. The cherimoya is very common in this region, which lies at an elevation of about 5,200 feet. There is great variation in the shape and character of the fruit, and the trees seem to vary in productiveness. Most of them bear very few fruits. The tree from which this bud wood was taken has a trunk about a foot in diameter, but at a distance of 10 feet from the ground the top has been removed, probably two years ago, and the sprouts which are to form the new top are now about 6 feet long. There are a good number of these sprouts and they are now in bearing, producing more fruit than is usually borne by the ordinary tree of mature size, although the latter would have a crown 10 to 20 feet broad and a vastly greater amount of fruiting wood. Whether the productiveness of this variety is an inherent characteristic or whether it has been induced by topping the tree, I am unable to determine, but on the chance that it may be inherently a heavy bearer I have secured bud wood for propagation and trial in Florida, and more especially in southern California, where cherimoya culture could undoubtedly be developed into a horticultural industry if prolific and otherwise desirable varieties were obtainable. The fruit of this variety is of excellent size and appearance. It varies from 3 to 7 inches in length and from about 6 ounces to nearly 3 pounds in weight. In form it is uniformly conical, blunt at the apex. The surface is nearly smooth, with the carpellary areas indicated by raised lines. The color is light green. The fruit begins to ripen about the first of October, but the season is not at its height until after the end of the year. Many of the fruits are attacked by an insect which burrows in the seeds. Its presence can be detected by small round holes on the surface of the fruit."

43486 and 43487. *PERSEA AMERICANA* Mill. *Lauraceæ*.
(*P. gratissima* Gaertn. f.)

Avocado.

43485 to 43487—Continued.

43486. "(No. 50. From Santa Maria de Jesus, October 20, 1916.) Avocado No. 4. *Itzamna*. From the garden of an Indian, who refused to divulge his name. The garden is in the center of the village, toward the Volcan de Agua from the central plaza. Santa Maria de Jesus is a small village located upon the upper slopes of the Volcan de Agua, at an elevation of 6,700 feet. It is about 10 kilometers from Antigua. As one climbs up the broad slope of the volcano the character of the vegetation changes considerably, and many of the plants common in the gardens at Antigua are not grown here because of the cold. Among the plants which are conspicuous by their absence are the banana, the orange (and other citrus fruits), and the tender ornamental plants, such as the royal palm. In their stead, the gardens of the Indians are filled with peach trees, chayote vines, granadilla vines (*Passiflora ligularis*), and with vegetables such as peas. The hardy Abyssinian banana is a common ornamental plant. Among the plants of the lower elevations which persist are the cherimoya, the avocado, and the matasano (Casimiroa), though I saw only one tree of the latter. *Grevillea robusta* is one of the commonest ornamental trees. It can thus be seen that the vegetation is not at all tropical in character. The commandant assures me that the thermometer goes below the freezing point, but records are lacking. This avocado has been obtained in the hope that it may prove slightly hardier than those from the lower elevations. In the United States it may succeed in regions which are a trifle too cold for the average Guatemalan variety. It should at least be given a test to determine its hardiness. The fruit is not yet fully grown, so it can not be described. The tree is about 25 feet high and is carrying a fair crop. It has good, large wood and seems to be a stronger grower than some I have seen. The fruits are almost round, tending toward broadly obovoid, and obscurely ribbed. The surface is very light green, almost glossy, with numerous large yellowish dots. The skin is slightly over one-sixteenth of an inch thick. The fruit looks like a good avocado. The season of ripening could not be ascertained, but probably it is not earlier than April."

43487. "(No. 15. San Lucas, Departamento de Sacatepequez, October 22, 1916.) Avocado No. 5. *Batab*. From the garden of an Indian, near the center of the village, to the west of the church. This village is situated on the road between the city of Guatemala and Antigua, at an elevation of 6,850 feet. The principal fruit trees in the gardens of the Indians are peaches, cherimoyas, avocados, quinces, manzanillas (*Crataegus stipulosa*), and pomegranates. There are no bananas here, and I saw only two or three orange trees. The tropical fruits do not succeed at this elevation. This variety, like No. 4 [S. P. I. No. 43486], has been selected because of its possible hardiness. Coming from an elevation about 1,750 feet above Antigua, it may prove to be more frost resistant than varieties from the latter place. It should be given a trial in localities in California and Florida which are slightly too cold for the average variety of this race. The tree is about 20 feet high, with a good crown. According to the owner, it bears over 200 fruits in good seasons, but sometimes the crop is partly de-

43485 to 43487—Continued.

stroyed by frost. The last of the fruits of this year's crop are now being picked. The fruit of this tree seems to ripen later than most of the avocados in Antigua, but this may be due to the difference in elevation. The fruit is of good size and quality, oblong oval, weighing up to a pound, deep green in color, with flesh of good flavor and a seed rather large in size, tight in the cavity, form truncate oval, size medium to above medium, weight 10 to 16 ounces, length $3\frac{3}{8}$ to $3\frac{1}{2}$ inches, greatest breadth 3 to $3\frac{5}{8}$ inches; base obliquely flattened, the stem inserted to one side in a shallow cavity; stem very stout, about 4 inches long; apex truncate to rounded, the stigmatic point slightly raised; surface pebbled or slightly rough, dull deep green in color, with a few yellowish dots and numerous rough russet scars; skin one-sixteenth of an inch thick at base, slightly thicker toward apex of fruit, coarsely granular, separating readily, brittle; flesh firm, oily, rich yellow near the seed, changing to pale green near the skin, very slightly discolored around the base of the seed with fiber traces; flavor very rich, nutty; quality very good; seed medium to rather large in size, oblate-conic in form, $1\frac{5}{8}$ to 2 inches broad, tight in the cavity, with both seed coats adhering closely."

43488. DIOSCOREA PRAESENS Benth. Dioscoreaceae. Yam.

From Ogbomosh, Nigeria, West Africa. Tubers presented by Dr. George Green. Received October 3, 1916.

"The dry season is from November to March, and during this time there usually comes one good shower of rain, about the end of January or early in February. (This year the rain came on February 3 and amounted to 2.03 inches—quite a good shower.) The native method of raising yams in Nigeria is as follows: The natives prepare the ground in hills or heaps about 3 feet in diameter, 2 feet in height, and 4 feet apart. These hills are made and the yams planted some time in January. The yams are cut into cross sections about 3 inches in thickness, and then these cross sections are cut into two pieces. One piece is planted in each hill, about 4 inches deep, and then covered with the soil; a tuft of grass is placed on top of the hill to protect the planted yam from the heat of the sun, and more soil is put on top of the grass to prevent the wind blowing the grass away. The yam sprouts through the sides of the hill, and the vines are supported by stout sticks placed perpendicularly or horizontally. Where the yams are being grown in a field that was used the year before for the raising of corn, the cornstalks that were left standing are broken and bent horizontally to the ground and the vines run on these stalks. The hills require frequent weeding and cultivation, and yams planted in January should be ready for digging in July. The yams require about 6 months to mature. When the vines die off, the yams are usually ready for digging. If the vines have died off entirely, it does not hurt the yams to leave them in the ground for a week or two. We use them entirely in the place of Irish potatoes; the method of cooking is quite similar to potatoes. Yams may be either boiled, baked, or steamed. The yam is cut into pieces of suitable size for cooking. I can recommend it as an article of food." (Green.)

43489. CARICA PAPAYA L. Papayaceae. Papaya.

From Allahabad, India. Presented by Prof. P. H. Edwards, Ewing Christian College. Received October 27, 1916.

"Papita."

43490 and 43491. HORDEUM VULGARE COELESTE L. Poaceæ.**Barley.**

From Tokyo, Japan. Presented by Mr. Teizo Ito, Chief of Plant Industry Division, Imperial Ministry of Agriculture and Commerce. Received November 1, 1916.

"Recently grown and forwarded to me from the Imperial Agricultural Experiment Station of this department at Nishigahara, Tokyo." (Ito.)

43490. "*Tashiro-Bozu*."**43491.** "*Mochi-Hadaka*."**43492 to 43543. Fabaceæ.**

From Mandalay, Burma. Presented by the Deputy Director of Agriculture, Northern Circle, through Prof. C. V. Piper. Received October 31, 1916. Quoted notes from the labels received unless otherwise stated.

43492. BOTOR TETRAGONOLOBA (L.) Kuntze.
(*Psophocarpus tetragonolobus* DC.)

Goa bean.

A climbing legume grown in tropical and subtropical regions for the young tubers, which are eaten raw or cooked, and for the young pods, which are an excellent vegetable.

43493. CACARA EROSA (L.) Kuntze.
(*Pachyrhizus angulatus* Rich.)

Yam bean.

The large tuberous roots of this leguminous vine are used for food and as a source of starch. For previous introduction, see S. P. I. No. 42452.

43494 to 43496. CAJAN INDICUM Spreng.**Pigeon pea.**

A leguminous shrub, often grown as an annual in the Tropics and Subtropics for its edible pealike seeds.

43494. "Variety 1, race 1."**43496.** "Variety 3."**43495.** "Variety 2."**43497 and 43498.** CANAVALI GLADIATUM (Jacq.) DC.**Sword bean.**

A rambling leguminous vine, the young pods and seeds of which are said to make a "well-flavored and wholesome" dish. It is also used as a cover crop. For previous introduction, see S. P. I. No. 43380.

43497. "Variety 1, race 1."**43498.** "Variety 1, race 2."**43499.** CANAVALI ENSIFORME (L.) DC.**Jack bean.**

A bushy, semierect, leguminous plant used as green feed in Hawaii and as a green-manure cover crop in Porto Rico.

43500 and 43501. CICER ARIETINUM L.**Chick-pea.**

A leguminous annual cultivated like bush beans. The peas are eaten boiled or roasted, like peanuts, often used in soups, or as a substitute for coffee. For previous introduction, see S. P. I. No. 43273.

43500. "Race 1."**43501.** "Race 2."**43502.** CROTALARIA JUNCEA L.**Sunn hemp.**

A leguminous plant used in India for its fiber, as a catch crop, and as a cover crop and green manure. For full treatment of this plant, see Watt, Commercial Products of India, pp. 430-437.

43503. CYAMOPSIS TETRAGONOLOBA (L.) Taub.
(*C. psoraloides* DC.)

Cluster bean.

A robust annual pulse cultivated in many parts of India. The pods are used as a vegetable and served like French beans; the plant is raised as a shade plant for ginger and cucumbers; and it is sown as an

43492 to 43543—Continued.

ordinary dry crop and used extensively as cattle fodder. The cluster bean is specially suitable as a green-manure or green-fodder crop, owing to the amount of nitrogen it contains and its comparative freedom (when young) from fiber. (Adapted from *Watt, Commercial Products of India*, p. 449.)

43504. DOLICHOS BIFLORUS L.**Horse gram.**

"The interest in this pulse is mainly as an article of cattle food, the green stems and leaves being a valued fodder. The split peas may be reduced to meal, or boiled, or fried and eaten with rice or other articles of diet." (*Watt, Commercial Products of India*, pp. 506-507.)

The work cited above should be referred to for a more complete discussion of the uses of this plant.

43505 to 43517. DOLICHOS LABLAB L.**Bonavist bean.**

"It [the bonavist bean] is grown all over India, more or less, as a green vegetable (corresponding very largely with French beans and, as a ripe pulse, with the broad bean) and also as a fodder crop." (*Watt, Commercial Products of India*, p. 510.)

43505. "Variety 1, subvariety (a), race 1, subrace."

43506. "Variety 1, subvariety (a), race 1, subrace."

43507. "Variety 1, subvariety (a), race 2."

43508. "Variety 1, subvariety (a), race 3."

43509. "Variety 1, subvariety (b), race 1, subrace."

43510. "Variety 1, subvariety (b), race 1, subrace."

43511. "Variety 1, subvariety (c), race 1, subrace."

43512. "Variety 2, race 1, subrace."

43513. "Variety 2, race 1, subrace."

43514. "Variety 3, subvariety (a), race 1, subrace."

43515. "Variety 3, subvariety (a), race 2."

43516. "Variety 3, subvariety (b), race 1."

43517. "Variety 3, subvariety (a), race 1, subrace."

43518. LATHYRUS SATIVUS L.**Bitter vetch.**

"This vetch is cultivated throughout India as a cold-weather crop and has the reputation for germinating on land too dry for other rabi crops. It is cultivated chiefly as a fodder, but as it is cheap and easily grown it is considerably used as a food by the poorer classes, principally in the form of bread, dil, or porridge." (*Watt, Commercial Products of India*, p. 704.)

43519. LENTILLA LENS (L.) W. F. Wight.**Lentil.***(Lens esculenta Moench.)*

"The seeds are used chiefly for soups and stews. They are about as palatable as split peas and rank amongst the most nutritious of vegetables." (*Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 1839.)

43520. PHASEOLUS AUREUS Roxb.**Mung bean.**

"Variety 2, subvariety (a)."

An erect or suberect, rather hairy much-branched plant cultivated throughout the southern half of Asia. The seeds are used almost exclusively for human food, and the straw is fed to cattle.

43492 to 43543—Continued.

43521 to 43523. *PHASEOLUS CALCARATUS* Roxb. Rice bean.

An annual half-twining plant cultivated in Japan, China, India, etc., for its edible beans and as a forage and cover crop.

43521. "Variety 2, race 1."

43523. "Variety 2, race 2."

43522. "Variety 1, race 1."

43524. *PHASEOLUS MUNGO* L.

Urd.

"Variety 1."

A plant very similar to the mung bean (*Phaseolus aureus*), but of lower growth and more spreading. It is used like the mung bean, the seeds for human food and the straw for fodder. It is also used as a green-manure crop.

43525. *PHASEOLUS RADIATUS* L.

"Variety 2, subvariety (c)."

A leguminous plant, native to India, of which the mung bean (*Phaseolus aureus*) is thought to be a cultivated derivative.

43526. *PHASEOLUS TRILOBATUS* (L.) Schreb.

(*P. trilobus* Ait.)

A trailing legume, native of India, the Malay Archipelago, and eastern Africa, allied to the mung and rice beans.

43527. *PISUM ARVENSE* L.

Field pea.

"A."

A angular-seeded pea, often placed as a variety of *Pisum sativum*, grown largely for forage and green manure.

43528. *PISUM SATIVUM* L.

Garden pea.

"B."

A strain that has proved valuable in Burma.

43529 to 43533. *SOJA MAX* (L.) Piper.

Soy bean.

(*Glycine hispida* Maxim.)

An important leguminous plant valuable for food and forage.

43529. "Variety 1, race 1."

43532. "Variety 2."

43530. "Variety 1, race 2."

43533. "Variety 3."

43531. "Variety 1, race 3."

43534. *STIZOLOBIUM NIVEUM* (Roxb.) Kuntze.

Lyon bean.

"Var. *utilis*. Race 1."

A climbing legume closely allied to the Florida velvet bean, but entirely devoid of stinging hairs. It is valued in India for its edible seeds.

43535. *STIZOLOBIUM ATERRIMUM* Piper and Tracy.

Mauritius bean.

"Race 3."

A leguminous forage plant related to the Florida velvet bean.

43536. *STIZOLOBIUM VELUTINUM* (Hassk.) Piper and Tracy.

"Race 2."

Velvet bean.

A species of velvet bean more or less extensively cultivated in Java.

43537. *VICIA FABA* L.

Broad bean.

"Variety 1."

This plant is grown largely for cattle feed in America, but the beans are extensively used for human food in other countries.

43492 to 43543—Continued.

43538 to 43540. *VIGNA CYLINDRICA* (Stickm.) Skeels. **Catjang.**

A leguminous plant closely allied to the cowpea, but with erect pods and smaller seeds.

43538. "Variety 1, subvariety (a), race 1."

43539. "Variety 1, subvariety (a), race 2."

43540. "Variety 2, subvariety (a)."

43541. *VIGNA SESQUIPEDALIS* (L.) Fruwirth. **Yard-Long bean.**
(*Dolichos sesquipedalis* L.)

"Variety 2, subvariety (c)."

"This can be used as a forage plant or the green pods may be cooked as snap beans, since they are more tender and brittle than those of the cowpea or catjang." (*Bailey, Standard Cyclopaedia of Horticulture, vol. 6, p. 3469.*)

43542 and 43543. *VIGNA SINENSIS* (Torner) Savi. **Cowpea.**

An important leguminous forage crop with numerous agricultural varieties.

43542. "Variety 1, subvariety (b), race 1."

43543. "Variety 1, subvariety (b), race 2."

43544 and 43545.

From Manila, Philippine Islands. Presented by Mr. Mack Cretcher, acting director, Bureau of Agriculture. Received October 18, 1916.

43544. *ANTIDESMA BUNUS* (L.) Spreng. Euphorbiaceæ.

Bignai. A small, evergreen tree found in India, the Malay Archipelago, and China, with glabrous leaves and flowers in pubescent spikes. The very juicy red fruits turn black when ripe and are about one-third of an inch in diameter. The bark of this tree yields a fiber from which rope is made, and the leaves are used as a remedy against snake bites and in syphilitic affections. The wood, when immersed in water, becomes black and as heavy as iron. All the parts of the plant have a bitter taste. The fruits are subacid in taste and are used in Java for preserving, chiefly by Europeans, and formerly sold for about 2 pence a quart. (Adapted from *Brandis, Indian Trees, pp. 564, 565*, and from *Lindley, Treasury of Botany, vol. 1, pp. 75, 76.*)

43545. *UVARIA RUFA* (Dunal) Blume. Annonaceæ. **Banauac.**

"*Banauac; Susong calabao.* Fruits of this species are oblong reniform, 3 to 4 centimeters in length, in bunches of 18 to 20, averaging 115 grams in weight; surface bright red, velvety, ferruginous pubescent; skin thin, brittle; flesh scant, whitish, juicy, aromatic, subacid without a trace of sugar; quality rather poor; seeds many. Season, September." (*Wester, Philippine Agricultural Review, vol. 6, p. 321.*)

43546 and 43547. *CHAYOTA EDULIS* Jacq. Cucurbitaceæ.

(*Sechium edule* Swartz.)

Chayote.

From Puerto Plata, Dominican Republic. Presented by the American consul. Received October 27, 1916.

"This fruit is known locally as *tayote*, and according to information obtained from farmers there are only two varieties existing in the district; these are known as white and green, probably due to the color of the fruit when ripe.

The fruit is planted in a horizontal position, and the plant generally begins to bear about three months later and continues to do so throughout the whole year. Some plants are known to bear constantly for a period of eight years or more. The plant is a vine, both climbing and recumbent. The fruit is used as a food and sometimes for medicinal purposes." (*Edw. L. Zowe, American vice consul.*)

43548. SCHINOPSIS LORENTZII (Griseb.) Engl. Anacardiaceæ. **Quebracho.**
(*Quebrachia lorentzii* Griseb.)

From Buenos Aires, Argentina. Received through the Bureau of Chemistry, from the Food Research Laboratory, Philadelphia, originally secured from the director of the Botanical Gardens, Buenos Aires, October 28, 1916.

"*Red quebracho.* A tree with very hard wood and compound coriaceous leaves; flowers borne in branching clusters, fruit a samara. The products which are obtained from this tree constitute the principal source of income of the people where it grows. It is one of the Argentine woods which when exposed to the air, buried in part or wholly, or submerged in water, keeps for years in good condition, as is shown by the tests made with posts, beams, ties, etc., laid by the Argentine railways. From this timber are manufactured logs, beams, ties, telegraph poles, lamp-posts, etc., which are exported in large quantities to foreign countries. The charcoal is very compact, and the extract (tannin) is an important product. The sawdust is very much used in tanning." (*Buenos Aires Botanic Garden, letter of October 1, 1916.*)

43549 and 43550. ARALIA spp. Araliaceæ.

From Ottawa, Canada. Roots presented by Mr. J. Adams, Assistant Dominion Botanist, Central Experiment Farm. Received November 6, 1916.

43549. ARALIA NUDICAULIS L. **Wild sarsaparilla.**

A native American species.

43550. ARALIA RACEMOSA L. **American spikenard.**

A native American species.

43551. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bel.**
(*Aegle marmelos* Correa.)

From Seharunpur, India. Presented by the superintendent, Government Botanic Garden. Received October 27, 1916.

See S. P. I. No. 43478 for previous introduction and description.

43552. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From Peradeniya, Ceylon. Presented by Mr. T. H. Parsons, curator, Royal Botanic Garden. Received November 7, 1916.

"*Cho-cho.* These are from the type commonly grown in Ceylon." (*Parsons.*)

43553 to 43556.

From Russia. Presented by Mr. W. P. Kotchekov, Russian Government Agricultural Agency, St. Louis, Mo., through Prof. C. V. Piper. Received November 7, 1916. Quoted notes by Mr. Kotchekov.

43553. AGROPYRON CRISTATUM (L.) Beauv. Poaceæ. **Wheat-grass.**

"From the Krasnokut Experiment Station, Samara, Russia."

43553 to 43556—Continued.

43554. *PANICUM MILLACEUM* L. Poaceæ. **Proso.**

"No. 1. Supposed to be a very old local variety. It matured almost two weeks earlier than regular Russian varieties of *proso*. From Tulun Experiment Field, Government of Irkutsk, Siberia."

43555 and 43556. *PISUM SATIVUM* L. Fabaceæ. **Garden pea.**

43555. "No. 15. A typical representative of old field peas of Irkutsk. From Tulun Experiment Field, Government of Irkutsk, Siberia."

43556. "No. 28. Very early form of field peas. From Tulun Experiment Field, Government of Irkutsk, Siberia."

43557. × CRATAEGUS DIPPELIANA Lange. Malaceæ. **Hawthorn.**

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received November 7, 1916.

This hybrid is a handsome shrub whose origin is unknown. It is spiny and has deep green, coarsely serrate, deeply lobed leaves. The white flowers are up to an inch in diameter and are produced very freely in June. The dull-red fruit is from one-half to five-eighths of an inch in diameter. This hybrid has been thought to be a cross between *Crataegus tanacetifolia* and *C. punctata* and resembles the former, although it has larger leaves and smaller fruits than this former species. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 428, and from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 888.)

43558. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ. **Japanese apricot.**

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received November 6, 1916.

A tree of the dimensions of the common apricot, with sharply serrate leaves up to 4 inches long and pale-rose flowers a little more than an inch wide. The yellowish or greenish fruits are produced singly or in pairs, are scarcely edible, and are about an inch in diameter. This tree is a native of Chosen, and perhaps of China. It is much cultivated in Japan for ornament, and the double-flowered form was introduced into Europe in 1878. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 244, and from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2824.)

See also description of fruit under S. P. I. Nos. 9211 to 9216.

The following recipe for pickling the fruits is taken from a letter from Mr. Frank N. Meyer, dated October 20, 1916: Pick fruits when full grown, but before they are quite ripe (they must be still hard); soak in a tub of water for 24 hours; drain off water, add salt, mixing one-third salt and two-thirds fruit in quantity; let them stand for a period of five to seven days. Should the weather be cool, seven days will make them right; should it be warm, five days is enough. Leaves of the red-leaved variety of *Perilla nankincensis* should be mixed among them. After this salting process the fruits are spread out in the sun to dry, and the juice of the salted red *Perilla* leaves is sprinkled over them by squeezing a handful of them, and the fruits turned over. Every day this process is repeated, and after three to five days they are put up in vessels in moderately weak brine with *Perilla* leaves mixed among them and in this way the product can be kept almost indefinitely. Mr. Watase was shown fruits said

to be 100 years old. Mr. Watase and I, when we were talking about it, both got the water freely flowing in our mouths. "Yes," he said, "our famous deceased General Nogi used to say to his soldiers, on a hot day in the Manchurian campaign when there was no water in sight, 'Boys, how would you like to have now some nice pickled mumes,' and nobody after that complained about thirst."

43559. TACCA PINNATIFIDA Forst. Taccaceæ. Fiji arrowroot.

From Donga, Nigeria, British West Africa. Presented by Rev. C. L. Whitman, Sudan United Mission. Received November 11, 1916.

"Has very starchy tubers, said to be somewhat poisonous. Leaves irregularly lobed, resembling a potato leaf. Seed stalk 1 foot to 8 feet high. Seed pods on a whorl of small pedicels 1 to 1½ inches in length. Grows wild in light upland soil near Donga. It is not cultivated here, but in its wild state is much sought after because of its starchiness. I have not learned the process by which it is made edible. It may be useful as a starch producer if it can be grown. Possibly it might be started under glass." (*Whitman.*)

43560. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November, 1916, to June, 1917.

"(Nos. 54, 109, 115, 137. Avocado No. 6.) *Kanola*. This variety possesses several valuable characteristics. It is the earliest one found in the Antigua region, commencing to ripen at the end of October. This makes it of particular interest to avocado growers in California, since early-ripening varieties are much desired in that State. The tree is exceedingly productive, and the fruit, though small, is of desirable round form and attractive glossy purple color. The flesh is yellow, free from fiber, and of rich flavor, while the seed is comparatively small for a fruit of round or oblate form.

'The parent tree is growing in the sitio of Victor Garcia, who keeps a small estanco on the road from Antigua to San Antonio Aguas Calientes, just above the church of San Lorenzo del Cubo. The elevation is approximately 5,600 feet. Beneath the tree, which stands on a rather steep hillside, coffee has recently been planted. The soil is very loose, black sandy loam, doubtless of volcanic origin. Judging from the crops grown in the vicinity, it must be quite fertile. The age of the tree is not definitely known. Victor Garcia says that it was already of large size when he was a lad, so it may be considered at least 40 years of age, most likely 50 or more. It stands about 35 feet in height, with a spreading but rather open crown 35 feet broad. The trunk is a foot and a half thick at the base. The first branches are about 8 feet above the ground. The young growths are stout, shapely, and vigorous. The indications are that the variety will be a strong grower. The bud wood is excellent, having strong, well-developed eyes well placed on the young twigs, which are round, smooth, and clean. There is no tendency for the eyes to drop from the young twigs, as there is in some varieties. The wood is not unusually brittle.

"Varieties growing at this elevation in Guatemala are not subjected to severe frosts, but should be as hardy as the average of the Guatemalan race.

"The flowering season of the parent tree is from the end of October to the first of December. It flowers very profusely and in good seasons sets heavy crops of fruit. The crop which ripened at the end of 1916 was enormous. It was impossible to make an accurate count, but a conservative estimate would place the number of fruits at 1,500 to 2,000. After such a heavy crop it is to be expected that a light crop will follow. Very few fruits are being carried

to ripen at the end of 1917. Victor Garcia states that at least a few fruits are always produced; some seasons the crop is small; in others it is very heavy, as it was in 1916. This is commonly the case with Guatemalan avocados.

"As already stated, the fruit commences to ripen at the end of October. Maturity is indicated by the appearance of a purple blush on one side of the fruit. At this stage it is considered ready for picking, but its flavor is much richer if left on the tree some months longer until the entire fruit is deep purple in color. Apparently this variety has an unusually long fruiting season, for a few fruits (which had been overlooked in picking) were found still hanging on the tree at the end of April, 1917.

"As observed during the past harvest, the ripening season appears to be as follows: First fruits maturing at the end of October; most of crop maturing in November and December, but better if left on the tree until January; a few fruits at least remaining on the tree until March and April.

"The fruit is uniformly oblate in form, resembling a grapefruit. In size it is small, weighing from 6 to 10 ounces. Under better cultural conditions, however, the weight will probably go up to 12 ounces. The color when the fruit is fully ripe is deep purple. The surface is pebbled, not distinctly roughened. The skin is of good thickness, hard, and brittle. The flesh is deep yellow in color, free from fiber, but with slight fiber discoloration (not, however, of an objectionable nature), of fine texture, and rich, oily flavor. The quality can be considered excellent. The seed is round, not large for a fruit of round or oblate form. It is generally found that fruits of this shape have seeds considerably larger in proportion to the size of the fruit than is common in the good varieties of pyriform or oval shape. As in nearly all Guatemalan varieties, the seed is quite tight in the cavity.

"Form roundish oblate; size small to below medium, weight 6 to 10 ounces, length $2\frac{3}{4}$ to 3 inches, greatest breadth 3 to $3\frac{1}{4}$ inches; base truncate, the stem inserted squarely without depression; stem fairly stout, 4 inches long; apex flattened, sometimes slightly oblique; surface pebbled, deep purple in color, sometimes almost glossy, with numerous small yellowish dots; skin one-sixteenth of an inch thick at basal end of fruit, about one-eighth of an inch thick at apex, separating readily from the flesh, rather finely granular, woody, brittle; fresh deep cream yellow to yellow near the seed, changing to very pale green near the skin, quite free from fiber and with unobjectionable fiber discoloration, firm in texture and of rich, oily flavor; quality excellent; seed small in comparison to size of fruit, oblate, about $1\frac{1}{2}$ ounces in weight, sometimes excentric, tight in the seed cavity, with both seed coats adhering closely." (*Popenoe*.)

For an illustration of the Kanola avocado, see Plate VII.

43561. CHORISIA INSIGNIS H. B. K. Bombacaceæ.

From Tucuman, Argentina. Presented by Mr. E. F. Schultz, Department of Agriculture, through Mr. W. Henry Robertson, American consul general, Buenos Aires. Received November 6, 1916.

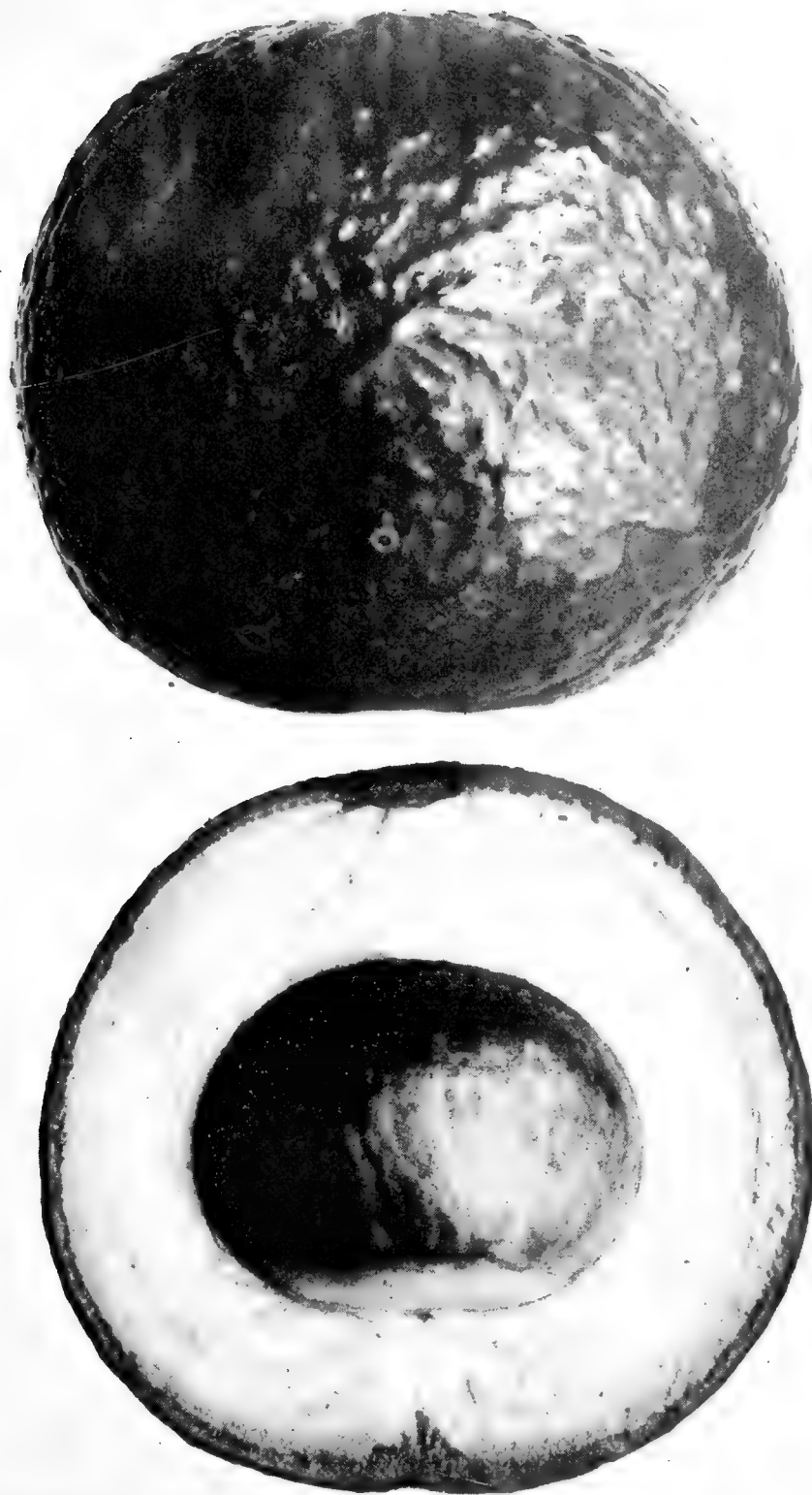
"Known throughout this country as *Palo borracho*, the drunken tree." (*Schultz*.)

See S. P. I. No. 42292 for previous introduction and description.

43562. PYRUS CHINENSIS \times COMMUNIS. Malaceæ. Hybrid pear.

Plants grown at the Plant Introduction Field Station, Chico, Calif. Numbered for convenience in distribution, November 17, 1916.

Hybrid pear, P. I. G. No. 6587, tree 3, row 46. Raised by Dr. W. Van Fleet in 1907 and presented to the Plant Introduction Field Station on December 22, 1909.



THE KANOLA AVOCADO, AN EARLY VARIETY. (*PERSEA AMERICANA* MILL., S. P. I. No. 43560.)

For southern California early-ripening varieties of the Guatemalan race are particularly desired, in order to have fruit available during the winter months. The variety here shown, from near Antigua, Guatemala, is considerably earlier than the average Guatemalan avocado and is at the same time an attractive fruit of excellent quality. (Photographed by Wilson Popenoe, Jan. 29, 1917, at Antigua, Guatemala; P17068FS.)



A BASKET OF FINE GUATEMALAN CHERIMOYAS. (*ANNONA CHERIMOLA* MILL.,
S. P. I. No. 43927.)

The cherimoya is recognized as one of the choicest fruits of the Tropics. It succeeds in southern California and other subtropical regions where the climate is cool and dry. Superior varieties, such as the one here shown, are not excelled in richness of flavor by the pineapple or the strawberry. They are now being introduced into this country by means of bud wood. (Photographed by Wilson Popenoe, Nov. 8, 1917, at the city of Guatemala, Guatemala; P17407FS.)

43563. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Livingston, Guatemala. Presented by Mrs. Lucie Potts. Received November 15, 1916.

"Seeds of the hard-shell 'pear.' This fruit was sent to me from the Vera Paz district and was cut on November 17. The inside was spoiled when I opened it on November 27. It was badly gathered. I think a small piece of stem should be left, since pulling it all off leaves a circular hole at the base of the fruit that permits a quicker decay." (*Mrs. Potts.*)

43564. POA FLABELLATA (Lam.) Hook. f. Poaceæ. **Tussock grass.**

From Stanley, Falkland Islands. Roots presented by Mr. W. A. Harding, manager, Falkland Islands Company, at the request of the American consul, Punta Arenas, Chile. Received November 15, 1916.

A coarse grass, native of the Falkland Islands, growing on peat soils near the sea. The plant forms dense masses of stems, which frequently rise to the height of 4 to 6 feet, and the long, tapering leaves, from 5 to 8 feet long and an inch wide at the base, hang gracefully over in curves. The plant is much relished by cattle, being very nutritious. The inner portion of the stem, a little way above the root, is soft and crisp and flavored like a hazelnut. The inhabitants of the Falkland Islands are very fond of it; they boil the young shoots and eat them like asparagus. (Adapted from *Hogg, Vegetable Kingdom*, pp. 823, 824.)

43565. CHAYOTA EDULIS Jacq. Cucurbitaceæ. **Chayote.**
(*Sechium edule* Swartz.)

From St. Lucia, British West Indies. Presented by the agricultural superintendent at the request of Hon. Francis Watts, Commissioner of Agriculture for the West Indies, Imperial Department of Agriculture, Barbados. Received November 10, 1916.

"White. The green and the white varieties appear to be the only ones known in these islands." (*Watts.*)

43566. FERONIELLA OBLATA Swingle. Rutaceæ. **Krassan.**

From Saigon, Cochin China. Presented by Mr. P. Morange, director, Agricultural and Commercial Services. Received November 13, 1916.

A spiny tree, 25 to 65 feet in height, native of Cambodia and Cochin China, growing rather commonly in forests, both on the plains and on the mountains. The leaflets of the pinnate leaves are oval with rounded or flattened tips, and the very fragrant white flowers appear in many-flowered panicles growing on the branches of the previous year's growth. The fruits are borne in clusters of three or four, are shaped like a flattened sphere, and are from 2 to 2½ inches in diameter. The pulp is edible and is subacid and pinkish. These fruits, which have a pronounced orange flavor when young, are used as a condiment in sauces. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 8, pp. 1219, 1220.)

43567 to 43577.⁴ Amygdalaceæ.

From Valencia, Spain. Procured through Mr. John R. Putnam, American consul. Received November 16, 1916.

Seeds introduced for the work of the Office of Horticultural and Pomological Investigations.

⁴ See footnote, p. 11.

43567 to 43577—Continued.

43567 to 43572. *AMYGDALUS PERSICA* L. **Peach.**
(*Prunus persica* Stokes.)

43567. *Melocoton Bandera Española.*

43568. *Tardio Encarnado.*

43569. *Bresquillo Duraznos.*

43570. *Tardio Amarillo.*

43571. *Melocoton Murciano.*

43572. *Melocoton de Sagunto.*

43573. *AMYGDALUS PERSICA NECTARINA* Ait. **Nectarine.**
Abridor de Alginet.

43574 to 43577. *AMYGDALUS PERSICA* L. **Peach.**
(*Prunus persica* Stokes.)

43574. *Roquete San Jaime.* **43576.** *Temprano Pequeño.*

43575. *Paria de Picasset.* **43577.** *Paria Fina Encarnada.*

43578. *CYPERUS ESCULENTUS* L. *Cyperaceæ.* **Chufa.**

From Valencia, Spain. Tubers presented by Mr. R. L. Sprague, American consul, Gibraltar, at the request of Mr. George Eustis, Newport, R. I. Received November 16, 1916.

"With regard to the cultivation of chufas, there appears to be little to say. Similarly to peanuts, they require a light sandy soil, well worked, and periodical irrigation. In preparing for planting, the soil is well pulverized and mixed with sea sand and organic manure, supplemented occasionally with superphosphates and a little ammonium sulphate. The surface is leveled and irrigation ditches made at a distance of 2 or 3 palms (17 to 24 inches) apart. The spaces between, or rows, are flattened in spots at intervals of 2 or 3 palms, the seed being placed three or four to each hill on the surface and these hills lightly covered with loose earth. The seed is not buried, and the depth of the covering should not exceed 2 inches. The only attention required is occasional weeding and irrigation, as the tuber requires plenty of moisture." (*Sprague.*)

43579. *CYRTOSTACHYS LAKKA* Beccari. *Phœnicaceæ.* **Palm.**

From Singapore, Straits Settlements. Presented by Mr. I. H. Burkill, director, Botanical Gardens. Received November 6, 1916.

A stately, elegant palm, producing suckers. The slender spineless stem is covered with a cluster of boldly arched leaves, $3\frac{1}{2}$ to $4\frac{1}{2}$ feet in length. The flowers are monœcious, and the dry fruits are elongate, egg shaped, and small, about 10 mm. (five-twelfths of an inch) long and half as wide. The ovate seeds are about one-sixteenth of an inch long. This species differs from *Cyrtostachys renda* in the more elongated and smaller fruits and in the oval seeds. (Adapted from Beccari, *Annales du Jardin Botanique de Buitenzorg*, vol. 2, p. 141, and from Bailey, *Standard Cyclopedia of Horticulture*, vol. 2, p. 947.)

43580. *TRICONDYLUS MYRICOIDES* (Gaertn. f.) Kuntze. *Proteaceæ.*
(*Lomatia longifolia* R. Br.)

From Clarence, Blue Mountains, New South Wales. Presented by Mr. Harry B. Shaw, Federal Inspector, port of New York, through Dr. G. R. Lyman, of the Department of Agriculture. Received November 9, 1916.

A shrub 8 to 10 feet high, with very narrow lance-shaped leaves and terminal or axillary racemes of cream-colored flowers. The fruit is an oval-oblong

follicle, and the seeds are winged. The wood is light colored and very hard, with a beautiful small figure, well suited for turnery. (Adapted from *Edwards's Botanical Register*, pl. 442, and from *Maiden, Useful Native Plants of Australia*, p. 564.)

43581 to 43583.

From Madagascar. Presented by Mr. Eugene Jaeglé, director, Agricultural Station of Ivoloïna, near Tamatave. Received November 8, 1916.

43581. MEDEMIA NOBILIS (Hildebr. and Wendl.) Drude. Phœnicaceæ.
(*Bismarckia nobilis* Hildebr. and Wendl.) Bismarck's palm.

A tall fan-shaped palm found in western Madagascar, with a stout columnar trunk. The compact foliage has a spread of 3 meters, and from the white-striped leafstalk hang immense clusters of light-brown fruits about the size of plums. (Adapted from *Wendland, Botanische Zeitung*, vol. 39, pp. 94, 95.)

43582. LAGERSTROEMIA SPECIOSA (Muenchh.) Pers. Lythraceæ.
(*L. flos-reginae* Retz.) Crape myrtle.

A tree, 50 to 60 feet in height, with leaves from 4 to 8 inches long and large panicles of flowers which vary from rose to purple from morning to evening. This is the chief timber tree in Assam and eastern Bengal, India, and also in Burma. It occurs along river banks and on low swampy ground and is commonly cultivated as an avenue tree. No special care is used in growing this tree, which is felled when from 30 to 50 years of age, and the timber is used for shipbuilding, boats, etc., being very durable under water. It has been introduced into southern California. (Adapted from *Watt, Commercial Products of India*, p. 701, and from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 1775.)

43583. LINOMA ALBA (Bory) O. F. Cook. Phœnicaceæ. Palm.

A slender, spineless, Arecalike palm found in tropical Asia, where it grows to a height of 30 feet or more and a diameter of 8 or 9 inches, dilated at the base. The leaves are 8 to 12 feet long. Branches of the spadix 6 to 18 inches long, erect or slightly reflexed, zigzag when young. By far the best of the genus and when young a very desirable pinnate house and table palm, deserving to be well known. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 1004.)

43584. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.
(*Sechium edule* Swartz.)

From Dorcyville, La. Presented by Mr. Leonce M. Soniat, Cedar Grove Plantation. Received November 20, 1916.

"Two of the fruits raised by a gentleman who lives on my place. These are a cross between the green and the white." (*Soniat*.)

43585. DIMOCARPUS LONGAN Lour. Sapindaceæ. Longan.
(*Nephelium longana* Cambess.)

From Paget East, Bermuda. Presented by Mr. E. J. Wortley, director, Bermuda Agricultural Station. Received November 20, 1916.

Bud wood from the same tree as seed of S. P. I. No. 43338.

43586. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(Prunus persica Stokes.)

From Nanking, China. Presented by Mr. Paul Jameson, American consul.
 Received November 22, 1916.

"A complete assortment of seeds of all peaches grown in this district. It is the custom to pick the fruit before it ripens." (*Jameson.*)

Introduced for the work of the Office of Horticultural and Pomological Investigations.

43587 to 43589. ROSA spp. Rosaceæ. Rose.

From Kew, England. Cuttings presented by Mr. W. Watson, curator, Royal Botanic Gardens. Received November 20, 1916.

43587. ROSA FERRUGINEA Vill.
(Rosa rubrifolia Vill.)

An erect shrub, 5 to 7 feet in height, whose stems are covered with a purplish bloom and are armed with small decurved prickles. The leaves are composed of five to seven beautiful purplish red, smooth leaflets, up to $1\frac{1}{2}$ inches in length. The deep-red flowers are $1\frac{1}{2}$ inches wide and occur a few in a cluster. The nearly globose red fruit is one-half an inch or more long and is smooth. This shrub is found in central Europe, especially in the Alps and Pyrenees and other mountainous regions. Its color makes it a most valuable ornamental in the vegetative condition, and it is very striking when planted in groups. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 440.)

43588. ROSA MOYESII Hemsl. and Wils.

A shrub 6 to 10 feet in height, with erect stems armed with stout, pale, broad-based prickles. The leaves are from 3 to 6 inches long and are composed of 7 to 13 leaflets, which are dark green above and pale glaucous below. The flowers, which occur solitary or in pairs, are a lurid dark red and from 2 to $2\frac{1}{2}$ inches in width. The red bottle-shaped fruits are $1\frac{1}{2}$ inches or more long, with a distinct neck between the body of the fruit and the persistent sepals. This rose is a native of western China and was first found on the frontier of Tibet at an altitude of 9,000 feet and over. It is perfectly hardy in the British Isles and is remarkable for the color of its petals. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 435.)

43589. ROSA VILLOSA L.
(Rosa pomifera Herrmann.)

A bush 4 to 6 feet high, armed with scattered, slender, but broad-based prickles up to one-half an inch long. The leaves, which are from 4 to 7 inches in length, are composed of five to seven leaflets, which are doubly serrate and downy on both surfaces. The deep rosy pink flowers are up to $2\frac{1}{2}$ inches wide and are produced in clusters of from three to six. The rich red fruit is pear shaped or rounded and about $1\frac{1}{2}$ inches long. This rose is a native of central Europe and has a larger fruit than any other hardy rose. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 439.)

43590. HOLCUS SORGHUM VERTICILLIFLORUS (Steud.) Hitchc. Poaceæ. Sorghum.

From the Seychelles Islands. Presented by Mr. P. Rivaly Dupont, curator, Botanic Station. Received June 22, 1915. Numbered November 25, 1916.

"Seeds of a wild sorghum collected at Anse aux Pins, Mahe, Seychelles." (Dupont.)

Seed separated from S. P. I. No. 40848 and grown during the season of 1916.

43591 and 43592. TRIFOLIUM PRATENSE L. Fabaceæ. Red clover.

From Reading, England. Presented by Messrs. Sutton & Sons. Received November 21, 1916.

43591. "*Sutton's cow-grass*, which invariably gives only one cutting in the year in this country and lasts four to five years." (Sutton.)

43592. "*English red clover*, the ordinary stock of red clover." (Sutton.)

43593. PASSIFLORA NAPAENSIS Wall. Passifloraceæ. Granadilla.

From Lawang, Java. Presented by Mr. M. Buysman. Received November 18, 1916.

A glabrous climbing plant, found up to 6,000 feet in India, with slender angular branches and distant leaves. The leaves are deep green above and up to 4 inches in length. The small cup-shaped flowers occur in lax few-flowered cymes, and the nearly globular fruit is purplish and about the size of a large pea. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 600.)

43594. DOLICHOS LABLAB L. Fabaceæ. Bonavist bean.

From Georgetown, British Guiana. Presented by Mr. J. F. Waby. Received November 13, 1916.

"*Var. Nankinicus*. Secured through one of the traveling instructors of the Department of Science and Agriculture in the County of Berbice, adjoining the County of Demerara. We use them as a side dish, mixed with rice, and prefer them to all other bonavists for this purpose." (Waby.)

43595 to 43597. MELILOTUS spp. Fabaceæ. Sweet clover.

From Erfurt, Germany. Purchased from Messrs. Haage & Schmidt, through Mr. Julius G. Lay, American consul general, Berlin. Received November 14, 1916.

43595. MELILOTUS NEAPOLITANA Ten.
(*M. gracilis* DC.)

An herb with slender roots and a straight, slender, glabrous stem 6 to 9 inches high. The leaflets are slightly serrate, and the racemes are straight and slender with pale-yellow flowers. The pods are straight and almost globular and contain two seeds. This plant has been reported from Frejus and Perpignan, France. (Adapted from *DeCandolle, Flora Francais*, vol. 5, p. 565.)

43596. MELILOTUS SEGETALIS (Brot.) Seringe.

An herb, sometimes erect and sometimes lying along the ground, with ovate leaflets somewhat serrate near the bases. The flowers occur in lax

43595 to 43597—Continued.

racemes, and the glabrous pods are nearly round and contain but a single seed. This plant is found in Mediterranean countries from Spain to Palestine and in northern Africa. It differs from *Melilotus sulcata* in having fruits two or three times as large. (Adapted in part from *DeCandolle, Prodromus Systematis Naturalis*, vol. 2, p. 187.)

43597. MELILOTUS SULCATA Desf.

An annual herb with erect stems and lax, elongated racemes of small yellow flowers. The rather small pods are almost round and are keeled. This plant has been found growing in clay in various places in Asia Minor. (Adapted from *Boissier, Flora Orientalis*, vol. 2, p. 106, 1872.)

43598. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ.**Yerba maté.**

From Concepcion, Paraguay. Presented by Mr. Thomas R. Gwynn. Received November 21, 1916.

A small evergreen tree, native of Paraguay and Brazil, whose leaves are roasted and ground to make the Paraguay tea of commerce. This plant might be grown in Texas and California. (Adapted from *Friderici, Tropenpflanzer*, 1907, pp. 776-783.)

See S. P. I. No. 43456 for further description.

43599. NOTHOPANAX ARBOREUS (Forst.) Seem. Araliaceæ.
(*Panax arboreum* Forst.)

From Avondale, Auckland, New Zealand. Presented by Mr. H. R. Wright, Avondale Nursery. Received November 22, 1916.

"Seeds of a very pretty evergreen shrub grown for its foliage. Height 15 feet." (Wright.)

43600. GARCINIA MANGOSTANA L. Clusiaceæ. **Mangosteen.**

From Zamboanga, Philippine Islands. Presented by Mr. J. A. Tiffany, Philippine Constabulary. Received November 22, 1916.

"The present crop of mangosteens in Jolo is the poorest for several years. I found only two or three seeds in each fruit I selected and these were not so good as has been usual in former crops. The next crop should yield some excellent fruits." (Tiffany.)

43601. CANARIUM OVATUM Engl. Balsameaceæ. **Pili nut.**

From Manila, Philippine Islands. Presented by Mr. Adn. Hernandez, Director of Agriculture. Received November 21, 1916.

A tree, native of the Philippines, with compound leaves and triangular drupes containing one seed. These nuts are eaten throughout the eastern part of the world, and from them is extracted an oil which is used for table purposes and also for burning in lamps. (Adapted from notes of H. H. Boyle, assistant horticulturist, Bureau of Agriculture, Manila.)

See also S. P. I. No. 38372 for further data.

43602. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November, 1916, to June, 1917.

"(Nos. 71, 127, 149. Avocado No. 7.) *Ishkal*. Several people have recommended this variety as a fruit of unusually fine quality. Ripe fruits of the variety have not been seen by me.

"The parent tree is growing in the patio of the Masonic Building, 7a Avenida Norte No. 4, Guatemala. The elevation here is 4,900 feet. Apparently the tree is quite old, at least 50 years, as it is 60 feet high, with the trunk more than 2 feet thick at the base. The crown is dense and seems to be in vigorous condition. The bud wood is excellent, having well-developed eyes which are not inclined to drop and leave a blind bud. Everything seems to indicate that the variety is oval to broadly obovoid in form. The caretaker states that it is formed, vigorous, and not unusually brittle.

"Avocados growing at this elevation in Guatemala are not subjected to severe frosts, but should be as hardy as the average of the Guatemalan race.

"The tree did not produce any fruit in 1916, but it flowered heavily early in 1917 and set a large crop of fruit, which promises to remain on the tree to maturity. According to the caretaker who lives on the property, the season of ripening is from March to July. The fruit is not at its best until May. If this is actually the case, the variety can probably be considered rather late in season of ripening.

"Judging from the young fruits on the tree at this time (July 20, 1916), the variety is oval to broadly obovoid in form. The caretaker states that it is about a pound in weight when mature and dull purple in color when ripe. The surface is strongly pebbled, the skin moderately thick, woody, and brittle. I am inclined to suspect that the seed may be undesirably large, but this can not be definitely ascertained at the present time. Don Pedro Brunj and others tell me that the flesh is of rich yellow color, unusually buttery in consistency, and very rich in flavor.

"This variety should not be propagated extensively until it has fruited in the United States, since it is included in this collection solely on the recommendation of Guatemalans who are familiar with it." (*Popenoe*.)

43603 to 43606. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Tegucigalpa, Honduras. Presented by Mr. Clarence W. Martin. Received November 24, 1916. Quoted notes by Mr. Martin.

43603. "*Colorados*. Red aguacates, largest and hardiest variety of Honduras. Stands all degrees of climate in Honduras, cold and hot. Grown at 72° F., mean temperature. Pear shaped."

43604. "*Moreño*. A mottled green and brown skin. The fruit is almost perfectly round and not pear shaped. From 3,000 feet altitude. Mean temperature here 72° F."

43605. "*Negros*. Black aguacates. From a cool altitude of 3,500 feet. This is a round aguacate. Grown at 72° F., mean temperature."

43606. "*Verdes*. A small green aguacate. Most sought after of all, on account of its better flavor. Pear shaped, long necked. Grown at 72° F."

43607 to 43632.

From Mandalay, India. Presented by Mr. A. W. Sawyer, assistant botanist. Received November 20, 1916. Quoted notes by Mr. Sawyer.

43607 to 43628. HOLCUS SORGHUM L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

43607 to 43632—Continued.

43607 to 43612. "Burmese dry-zone sorghums, from the Meiktila District."

43607. "No. 1A. *Pyaung-pyu-galè*. Used as fodder."

43608. "No. 2A. *Pyaung-ni-galè*. Used as fodder."

43609. "No. 3A. *Pyaung-shwè-wa*. Used as fodder."

43610. "No. 4A. *Sán-pyaung*. Used as grain and eaten by man and cattle."

43611. "No. 5A. *Kôn-pyaung*, white. Used as grain and fodder."

43612. "No. 6A. *Pyaung-net*. Used as fodder."

43613 to 43628. "Indian varieties of sorghum."

43613. "No. 1B. *Saloo*. From Central Provinces; used as grain."

43614. "No. 2B. *Collier*. From Central Provinces; used as fodder."

43615. "No. 3B. *Dukuri*. From Poona (Dekkan); used as grain."

43616. "No. 4B. *Hundi*. From Poona (Dekkan); used as grain."

43617. "No. 5B. *Nilwa*. From Poona (Dekkan); used as fodder."

43618. "No. 6B. *Peria Manjal Cholam*. From Madras."

43619. "No. 7B. *Palpu Jonna*. From Madras; used as fodder."

43620. "No. 8B. *Giddu Jonna*. From Kurnool (Madras); used as grain."

43621. "No. 9B. *Cherukupatsa Jonna*. From Kurnool (Madras); used as grain."

43622. "No. 10B. *Tella Jonna*. From Bellary (Madras); used as grain."

43623. "No. 11B. *Patcha Jonna*. From Bellary (Madras); used as grain."

43624. "No. 12B. *Pedda Jonna*. From Nandyal (Madras); used as fodder."

43625. "No. 13B. *Sweet Juar*. From Lyallpur (Punjab)."

43626. "No. 14B. *Andhri*. From Cawnpore (United Provinces); used for grain and fodder."

43627. "No. 15B. *Bawni*. From Cawnpore (United Provinces); used as grain."

43628. "No. 16B. *Dodania*. From Cawnpore (United Provinces); used as grain and fodder."

43629. ELEUSINE CORACANA (L.) Gaertn. Poaceæ. **Ragi millet.**

"No. 10. *Sât-ni*. From Koilpatti (Madras); used for grain and fodder."

43630. CHAETOCHLOA ITALICA (L.) Scribn. Poaceæ. **Millet.**
(*Setaria italica* Beauv.)

"No. 2C. *Sât*. From Meiktila District, Burmese dry zone; used for grain and fodder."

43607 to 43632—Continued.**43631.** PANICUM MILIACEUM L. Poaceæ. **Proso.**

"No. 3C. *Lū*. From Meiktila District, Burmese dry zone; used for grain and fodder."

43632. PANICUM MILIACEUM L. Poaceæ. **Proso.**

"No. 4C. *Lū*. From Mohywa, Burmese dry zone; used as grain and fodder."

43633. JUNIPERUS PACHYPHLOEA Torr. Pinaceæ. **Juniper.**

From New Mexico. Collected by Dr. David Griffiths, of the Bureau of Plant Industry. Received November 23, 1916.

"Collected in the Organ Mountains, October 9, 1916." (*Griffiths.*)

A large tree, often 50 to 60 feet high, with a short trunk 3 to 5 feet in diameter and smooth, reddish brown bark. The leaves are bluish green, and the flowers appear in February and March. The large, reddish brown fruits contain a thick, dry, mealy flesh and are gathered and eaten by the Indians. The wood is light and soft and not strong. This tree is found on dry, arid mountain slopes at elevations of 4,000 to 6,000 feet in the southwestern part of the United States and northwestern Mexico. (Adapted from *Sargent, Manual of the Trees of North America*, pp. 90, 91.)

43634 and 43635. JASMINUM spp. Oleaceæ. **Jasmine.**

From Kew, England. Cuttings presented by Sir David Prain, director, Royal Botanic Gardens. Received November 22, 1916.

43634. JASMINUM REVOLUTUM Sims.

A nearly evergreen shrub of a lax, spreading habit, being the stoutest of the cultivated jasmines. The dull, very dark green leaves are composed of from three to seven leaflets, and the fragrant, yellow flowers are produced in terminal corymbs of 6, 12, or more together. This shrub is a native of Afghanistan and the northwestern Himalayas. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, pp. 661, 662).

43635. JASMINUM WALLICHIANUM Lindl.

A nearly evergreen shrub, with slender, angled, smooth branchlets and alternate leaves composed of from 7 to 13 leaflets up to 1½ inches in length. The yellow flowers are about five-eighths of an inch long and are produced either singly or in clusters of three. This shrub is a native of Nepal, India, and has been cultivated in England since 1812. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 626.)

43636. SOLANUM MELONGENA L. Solanaceæ. **Eggplant.**

From Westfield, N. J. Presented by Dr. R. S. Keelor. Received November 27, 1916.

"The Japanese eggplant of the long-fruited variety, grown from seed in my own garden at Westfield, N. J., from seed imported from Japan. This variety of eggplant is very fruitful and possesses fine keeping qualities. In fact, I still have some of them on hand and find them very good eating, although they were picked from the garden five weeks ago, after having been exposed to four or five rather severe frosts and a temperature as low as 36° F." (*Keelor.*)

43637. LEUCAENA GLAUCA (L.) Benth. Mimosaceæ.

From Miami, Fla. Presented by Mr. S. H. Richmond. Received November 28, 1916.

"A shrub which grows 10 feet high. The plants sprang up, grew 6 feet, and fruited after we supposed every root had been eradicated." (*Richmond.*)

43638. XANTHOSOMA sp. Araceæ.**Yautia.**

From Rama, Nicaragua. Presented by Mr. Carlos Berger. Received November 28, 1916.

"Tubers of the supposed *Palma yautia*. This plant has the peculiarity of drying up during the dry season, like *Dorstenia contrayerva* and several other plants, all of which dry up here in January, when it still rains, and stay so during the whole so-called dry season, even though it be really dry only a month or so, and despite the fact that the mounds seldom dry out, except in an unusually dry season, about once in ten years. This induces me to believe that these plants have emigrated from the interior of Nicaragua, where there is a well-defined dry season and where they may have acquired the habit of drying up at a certain season of the year." (*Berger.*)

43639 to 43641. SOJA MAX (L.) Piper. Fabaceæ. Soy bean.
(*Glycine hispida* Maxim.)

From Canton, China. Presented by the American consul general, through the Department of Commerce. Received November 27, 1916.

"Four varieties of beans are grown in the Canton consular district: The black, the red, the yellow, and the so-called white. These beans are cultivated along the banks of the Tsochiang and the Yuchiang, in Kwangsi. The best varieties are said to come from near Siangshui and Lungchow in the southwestern part of the Province. The actual acreage under cultivation can not be estimated, on account of the fact that the beans are not cultivated in any one district but in many places and in small patches of from 1 to 3 mou. (The mou varies in different parts of China; in Canton 4.847 mou equal 1 acre.)" (From *Consular Report, November 7, 1916, p. 504.*)

43639. "White bean. The white bean is called by the Chinese *chutou* or *pearl-shaped* bean. It is grown principally in the Province of Kwangsi, although certain quantities are produced in Kwangtung, Yunnan, and Kweichow Provinces, which are within this consular jurisdiction." (*Consular Report, November 7, 1916, p. 504.*)

43640. "Black beans."**43641.** "Yellow beans."**43642 to 43671.**

From Cairo, Egypt. Seeds presented by the director, Horticultural Division, Ministry of Agriculture, Gizeh Branch. Received November 10, 1916.

43642. ACACIA SCORPIOIDES (L.) W. F. Wight. Mimosaceæ. Babul.
(*A. arabica* Willd.)

A shrub or small tree, with gray branchlets, and leaves composed of 10 to 20 pairs of leaflets. The flowers are in groups of two to five, and the flat, gray-downy pods are from 3 to 6 inches long. This plant is found extensively in India; also in Arabia and Europe. The gum (Indian gum arabic) which exudes from the tree is of great commercial value and is used for a variety of purposes. The gum is usually obtained without tapping. The pure pale gum comes only from healthy trees and under

43642 to 43671—Continued.

favorable circumstances; long exposure to dampness or rain darkens the gum, and gnarled or diseased stems produce only the inferior darker gum. This gum is used in calico printing and in all other industries where a mucilage is necessary. The bark of this tree as well as the pods is extensively used in India as a tanning material, and the wood is much valued on account of its hardness and durability. It may be raised from seeds. (Adapted from *Watt, Commercial Products of India*, pp. 2-8, and from *Bailey, Standard Cyclopedia of Horticulture*, vol. 1, pp. 188-189.)

- 43643.** CAESALPINIA PECTINATA Cav. Cæsalpiniaceæ. **Tara.**
(*C. tinctoria* Domb.)

An erect shrub or small tree, native of Peru, where it grows at altitudes from 8,000 to 10,000 feet. In the vicinity of Lima, Peru, the pods are used as a tanning material.

See also S. P. I. No. 41323.

- 43644.** CAESALPINIA SEPIARIA Roxb. Cæsalpiniaceæ.

A tree found ascending to 4,000 feet in the Himalayas, distributed throughout tropical Asia, and also introduced into tropical America. It is covered with numerous small pale-brown prickles and has rather narrow glabrous leaves about a foot long. The bright-yellow flowers occur in simple, lax racemes from 1 to 2 feet long, and the pods are less than 2 inches long, are hard, and clothed with very small deciduous bristles. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 256.)

- 43645.** CAILLIEA NUTANS (Pers.) Skeels. Mimosaceæ.
(*Dichrostachys nutans* Benth.)

A spiny much-contorted shrub or small tree, native of central Africa. The Acacialike leaves are composed of 5 to 10 pairs of pinnæ, each with 10 to 20 pairs of leaflets. The flowers occur in dense axillary spikes, the upper ones sulphur yellow and the lower ones rosy lilac. The pod is twisted and is about a third of an inch wide. This shrub has been introduced into southern California. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 1003.)

- 43646.** CAJAN INDICUM Spreng. Fabaceæ. **Pigeon pea.**

A shrub 3 to 10 feet high, cultivated in the Tropics for the nutritious peas. The flowers are yellow and maroon, and the pods are hairy and pealike. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 613.)

See S. P. I. No. 41646 for previous introduction.

- 43647.** CALLISTEMON SPECIOSUS (Sims) DC. Myrtaceæ. **Bottle-brush.**
(*Metrosideros speciosus* Sims.)

A large shrub, native of New South Wales, Australia, but cultivated in the British Isles and in the United States. The leaves are lance shaped, with prominent midribs, and the bright red flowers occur in terminal spikes from 2 to 6 inches long. The golden yellow of the anthers contrasting with the dark red filaments makes this a beautiful ornamental. It may be grown anywhere, except in places subject to frosts. (Adapted from *Curtis's Botanical Magazine*, pl. 1761, and from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 630.)

43642 to 43671—Continued.

43648. CASSIA CORYMBOSA Lam. Cæsalpiniaceæ.

A very handsome shrub, native of Argentina, but introduced and cultivated in the British Isles and the middle portion of the United States. It attains a height of 4 to 10 feet, and the leaves are composed of three pairs of leaflets. In the spring the branches are clothed with numerous corymbs of bright-yellow flowers. This is one of the best-known garden species, being an excellent conservatory plant for spring, summer, and autumn bloom. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 680, and from *Florists' Exchange*, July 27, 1912.)

43649. CASSIA DIDYMOBOTRYA Fres. Cæsalpiniaceæ.

A woody plant, native of Abyssinia, with leaves composed of five to seven pairs of leaflets. The flowers occur in racemes growing from the upper axils, the petals being painted by the thick, colored nerves and veins. The slender pods are compressed. (Adapted from *Fresenius, Flora*, vol. 22, p. 53, 1839.)

43650. CASSIA EREMOPHILA A. Cunn. Cæsalpiniaceæ.
(*C. nemophila* A. Cunn.)

A woody plant, found in all the colonies of Australia except Tasmania. The leaves are composed of two pairs of very narrow leaflets, and the pods are very smooth. In Australia both the pods and the leaves of this plant are eaten by stock. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 47.)

43651. CITHAREXYLUM QUADRANGULARE Jacq. Verbenaceæ.

A large tree, native of the West Indies, with permanently 4-angled branches and opposite, entire, serrate leaves. The small white odorous flowers occur in racemes, and the fruit is a fleshy drupe. This tree might prove to be a good ornamental for the northern part of the United States. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 778.)

43652. CLERODENDRUM INDICUM (L.) Druce. Verbenaceæ.
(*C. siphonanthus* R. Br.)

A shrub, 2 to 8 feet high, rather openly branched, with opposite or verticillate narrow notched leaves. The white flowers, which occur in very large terminal racemes, have tubes 3 to 4 inches long. The fruit is a showy red and purple berry, which persists a long time. This shrub is a native of the East Indies and is also hardy in Florida. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 801.)

43653. ARECASTRUM ROMANZOFFIANUM (Cham.) Becc. Phœnicaceæ.
(*Cocos romanzoffiana* Cham.) Palm.

This coconut palm is found in Santa Catharina, Brazil, and bears a fibrous fruit, which is eaten, although containing insipid juice. But one seed is contained in this fruit, which is said to be about the size of a walnut. The spadix is about 6 feet in length. (Adapted from *Choris, Voyage Pittoresque Autour du Monde*, p. 5.)

43654. CORDIA MYXA L. Boraginaceæ. Sebesten.

A moderate-sized deciduous tree, found in tropical Asia and Australia, with oval leaves and thick, rough bark. The wood is soft and is said to have furnished the lumber from which the mummy cases were made. In India it is used for boat building, gunstocks, and agricultural imple-

43642 to 43671—Continued.

ments; it is an excellent fuel. The bark is made into ropes and the fiber is used for calking boats. The fruits are succulent and mucilaginous and when young are eaten as vegetables or pickled. They have also been employed as pectoral medicines. (Adapted from *Maiden, Useful Native Plants of Australia*, pp. 19, 165, 407, 620, 639, and from *Gamble, Manual of Indian Timbers*, p. 270.)

43655. GENISTA RAETAM Forsk. Fabaceæ.

Retem.

(*Retama raetam* Webb.)

A simple-leaved shrub, from 1 to 3 meters in height, found everywhere on the sand dunes in various places in Egypt; also in Tunis, Algeria, etc. It is densely branched, and the leaves are about 5 mm. long. The sessile white flowers, one to five in a cluster, are about a centimeter long; the pods are inflated and abruptly beaked. The bitter roots are made into a decoction which is used by the Arabs as a heart stimulant. The plant, after maceration in water, is applied to wounds as a curative. (Adapted from *Forskål, Flora Aegyptico-Arabica*, p. 214, and from *Muschler, Manual Flora of Egypt*, vol. 1, p. 473.)

43656. GMELINA ARBOREA Roxb. Verbenaceæ.

Gumhâr.

A large tree, occurring over a large part of India, but nowhere plentiful, being found up to 5,000 feet altitude in moist places. It reaches a height of over 100 feet and a diameter of about 5 feet and is found in deciduous forests in moist, fertile valleys. It has smooth gray bark and loses its leaves in hot weather. While the leaves are off, the flowers appear, followed a little later by the new leaves. The wood is yellowish or white, not very hard, but light and strong, with a handsome luster. As it is easily worked and takes varnish well, it is used for dugout canoes, furniture, carriages, toys, dolls, etc. In Madras the juice of the root is used in cases of dysentery. The tree is often planted in avenues and can readily be raised from seeds. (Adapted from *Rodger, Forest Bulletin (India) No. 16, 1913.*)

43657. JATROPHA CURCAS L. Euphorbiaceæ.

A large shrub or tree, up to 15 feet in height, found throughout tropical America and Africa. It has long-petioled leaves, somewhat three to five lobed, like the English ivy. The flowers are small and yellowish green, occurring in many-flowered cymes. From the seeds there is obtained by hot pressing an oil of great commercial value. Medicinally it is similar in its action to croton oil, but is a milder laxative. Large quantities are imported into Europe for soap manufacture and for lighting purposes. It is said to be especially used in the manufacture of a transparent soap for dressing woolen cloths. As a drying oil it is also very valuable. The chief supply of this oil (*Oleum infernale*) now comes from the Cape Verde Islands, where the Portuguese Government is making large plantations of *purgueira*, as it is known. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 3, p. 1720, and from the *Bulletin of the Bureau of Agricultural Intelligence*, p. 278, April, 1911.)

43658. KALANCHOE MARMORATA Baker. Crassulaceæ.

(*K. grandiflora* A. Rich.)

A very stout low-branching shrub, native to the mountains of Abyssinia. The oval succulent leaves are pale green, blotched with purple; the young leaves are orange-green with blood-red spots; all of the leaves are crenate.

43642 to 43671—Continued.

The creamy white flowers, each more than 2 inches long, are in large compound panicles. (Adapted from *Gardeners' Chronicle*, vol. 12, Sept. 10, 1892, and from *Curtis's Botanical Magazine*, pl. 7333.)

43659. *MICROCOS LATERIFLORA* L. Tiliaceæ.

(*Grewia asiatica* L.)

A small tree, native of tropical Africa and India, with roundish serrate leaves from 2 to 7 inches long. The flowers are yellow, and the fruit is a round, hairy drupe about the size of a pea. The leaves and the fruits are said to be used in the treatment of dyspepsia and diarrhea. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 386, and from *Dragendorff, Heilpflanzen*, p. 419.)

43660. *MONTANOA HIBISCIFOLIA* (Benth.) C. Koch. Asteraceæ.

One of the tree daisies of Central America, which is easily distinguished by its five to seven lobed, opposite, entire leaves. It is easily cultivated, the seeds being started indoors and the plants transferred to the open for foliage effects. It may also be propagated by cuttings. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 4, p. 206½, and from *Koch, Wochenschrift des Vereines zur Beförderung des Gartenbaues*, vol. 7, p. 407.)

43661. *PAVONIA SPINIFEX* (L.) Cav. Malvaceæ.

A weak-growing shrub, sometimes attaining the height of 20 feet, but with a slender stem and few upright branches. The alternate leaves are oval heart shaped, crenate, and hairy on both sides. The large yellow flowers are odorless. This shrub is a native of South America and is of horticultural value for its flowers. (Adapted from *Botanical Register*, pl. 339, and from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2489.)

43662. *PONGAM PINNATA* (L.) W. F. Wight. Fabaceæ.

(*Pongamia glabra* Vent.)

A tall, erect tree or climber with glabrous branches and leaves, the latter composed of five to seven opposite leaflets. The flowers occur in simple axillary racemes, and the woody, glabrous pods are up to 1½ inches long. This species is a native of tropical Asia and Australia and was first introduced into the United States in 1910. The yellow, tough, close-grained wood is prettily marked and might be used for chair making. In India an oil is extracted from the seeds, which is used as an illuminant and as an application in skin diseases. A poultice made of the leaves is used as a remedy for ulcers. The ash of the wood is a dyeing material. Owing to its handsome foliage, this tree is used as an ornamental in the Southern States. (Adapted from *Maiden, Useful Native Plants of Australia*, pp. 200, 591, and from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2753.)

43663. *SAPINDUS VITIENSIS* A. Gray. Sapindaceæ.

A tree about 30 feet in height, with warty bark on the branchlets and with leaves composed of three to four pairs of shiny green leaflets about 4 inches long. The numerous flowers occur in large terminal panicles, but are small and white and apparently not of ornamental value. Found in the Fiji Islands on leeward coasts. (Adapted from *Gray, U. S. Exploring Expedition, Botany*, vol. 1, pp. 251, 252.)

43642 to 43671—Continued.

43664. *SCHINUS TEREBINTHIFOLIUS* Raddi. Anacardiaceæ.

A small evergreen tree, native of Brazil, with alternate leaves composed of two to seven pairs of oblong, sessile leaflets with serrate margins. The flowers occur in terminal panicles and are followed by globose vermilion fruits. All parts of this tree, and especially the bark, are more or less resinous; the native fishermen smear this resin on their nets to protect them from the water. The leaves are used as an application to wounds and sores. In Minas Geraes the young twigs are used as toothbrushes, cleaning the teeth and hardening the gums. (Adapted from *Rodrigues, Hortus Fluminensis*, p. 102.)

43665. *SOLANUM MACRANTHUM* Dunal. Solanaceæ.

An ornamental tree, native of Brazil, attaining a height of 12 to 14 feet and probably more. The ample, alternate leaves, with acutely lobed margins, have prickly veins. These prickles become large and stout on the lower surface, especially on the midrib. The flowers, which occur in axillary racemes, are large and pale lilac in color, with darker dashes and pale lines. This tree has long been cultivated at the Royal Botanic Gardens, Kew. It is readily propagated from cuttings. (Adapted from *Curtis's Botanical Magazine*, pl. 4138.)

43666. *SPARTIUM JUNCEUM* L. Fabaceæ.

Spanish broom.

A tall shrub of rather gaunt habit, native of southern Europe, with erect, cylindrical, rushlike stems, smooth and dark green, which take the place of leaves. The leaves are very few and deciduous, and the fragrant flowers, which occur in terminal racemes up to 18 inches in length, are of a rich glowing yellow. The pods are from 1½ to 3 inches long and contain from 5 to 12 seeds. This shrub is grown for its showy flowers, which appear from June to September, and also for the fiber, which is obtained from the branchlets by maceration. This fiber is worked up into thread, cordage, etc. The plant must be raised from seeds and kept in pots until ready to be set out. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 522, 523.)

43667. *SPHAERALCEA UMBELLATA* (Cav.) Don. Malvaceæ.

(Malva umbellata Cav.)

A woody plant, native of Mexico, attaining a height of a foot and a half, covered with dense hairs. The heart-shaped leaves are somewhat seven lobed and dark green, and its numerous scarlet flowers occur in clusters of three, or rarely of four or five. (Adapted from *Edwards's Botanical Register*, vol. 19, p. 1608.)

43668. *TERMINALIA ARJUNA* (Roxb.) Wight and Arn. Combretaceæ.

A very large tree with smooth green or whitish bark found on the banks of rivers and streams throughout central and southern India. The leaves are narrowly oblong and up to 9 inches in length. The flowers, which appear in April and May, occur in terminal panicles, and the fruit is a 5-winged drupe about 2 inches long. This tree yields a clear, transparent gum, which is used as a drug in northern India; the bark is used as a dye and for tanning, and the wood, which is apt to split in seasoning, is used for carts and agricultural implements. The ash from this wood contains a very high percentage of lime. (Adapted from *Watt, Commercial Products of India*, p. 107, and from *Beddome, Flora Sylvatica of India*, vol. 1, pl. 28.)

43642 to 43671—Continued.

- 43669.** *THRYALLIS BRASILIENSIS* L. Malpighiaceæ.
(*Galphimia brasiliensis* Juss.)

A shrub, native of Brazil, with reddish, oval, lance-shaped leaves about 1 inch long and small yellow flowers in short, lax panicles. This ornamental plant has been introduced into California, where its bright flowers make it very attractive. In Brazil it is called *Resedá amarelo* and *Tintureira*. The flowering season is from September to December. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 3, p. 1312, and from *Rodrigues, Hortus Fluminensis*, p. 62.)

- 43670.** *TOONA CILIATA* Roemer. Meliaceæ. Toon tree.
(*Cedrela toona* Roxb.)

A large deciduous tree, found chiefly near streams in tropical sub-Himalayan regions. The wood obtained from this important timber tree is not eaten by white ants and is very durable.

See S. P. I. No. 43288 for further description.

- 43671.** *WIGANDIA CARACASANA* H. B. K. Hydrophyllaceæ.

A shrubby tropical plant with a green hairy stem and alternate rusty hairy leaves 5 to 6 inches long. The large, pale-violet flowers are borne in loose terminal panicles and make the plant a very showy ornamental. It does not do very well indoors in greenhouses, but should be planted outside in frostless regions. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 6, p. 1975, and from *Curtis's Botanical Magazine*, pl. 4575.)

- 43672.** *PROSOPIS CHILENSIS* (Molina) Stuntz. Mimosaceæ.
(*P. juliflora* DC.) Algaroba.

From Honolulu, Hawaii. Presented by Mr. J. M. Westgate, agronomist, Hawaii Agricultural Experiment Station. Received November 20, 1916.

A leguminous tree with small flowers in little heads or spikes. The pod is more or less thickened, and the leaves are composed of a large number of leaflets. This tree is a native of Mexico and the West Indies. (Adapted from *note of W. Harris, Kingston, Jamaica, April 7, 1916.*)

See also S. P. I. No. 42643 for further data.

The algaroba has become a very important forage tree in the Hawaiian Islands, where its dissemination has been fostered. The pods are used for fattening pigs.

- 43673 and 43674.** Undetermined. Myrtaceæ.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received November 20, 1916.

43673. From tree No. 2.

43674. From tree No. 3.

For previous introduction and description, see S. P. I. No. 43441.

43675 to 43701.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum and selected by Mr. H. C. Skeels and Dr. W. Van Fleet, of the Bureau of Plant Industry. Received November 20, 1916.

- 43675.** *ACANTHOPANAX SESSILIFLORUM* (Rupr. and Maxim.) Seem.
Araliaceæ.

An ornamental hardy shrub, found in eastern Siberia. The leaves are palmate, the brownish flowers occur in dense umbels on the spiny

43675 to 43701—Continued.

branches, and the fruits are blackish berries. (Adapted from *note of Frank N. Meyer, dated Nov. 24, 1906.*)

See also S. P. I. No. 19476 for further data.

43676. ACER ARGUTUM Maxim. Aceraceæ. Maple.

A small deciduous tree, with erect branches and doubly serrate leaves from 2 to 4 inches in length. The greenish yellow flowers are produced in April before the leaves, and the keys are borne in hanging racemes. This tree is a native of the mountain woods of Japan and makes an elegant appearance with its pale-green leaves in summer and its purplish brown branches in winter. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 135.*)

43677. BUDDLEIA DAVIDII SUPERBA (DeCorte) Rehd. and Wils. Loganiaceæ.

A large shrub, from 8 to 10 feet high, with rather thick, slightly wrinkled leaves, and pale rose-colored flowers in dense panicles which appear from the axils of the uppermost leaves. This shrub is found in central and western China. (Adapted from *E. H. Wilson, Horticulture, Sept. 20, 1913*, and from *Journal of Horticulture, July 10, 1913.*)

43678. BUDDLEIA DAVIDII VEITCHIANA Rehder. Loganiaceæ.

A large shrub, having an erect habit and with 4-angled shoots. The flowers are bright mauve with orange-yellow throats, and they occur in rather dense panicles. This variety has a more erect habit and dense flower clusters than the typical species. (Adapted from *E. H. Wilson, Horticulture, Sept. 20, 1913.*)

**43679. CAMPYLOTROPIS MACROCARPA (Bunge) Rehder. Fabaceæ.
(*Lespedeza macrocarpa* Bunge.)**

A shrub, up to 6 feet in height, with long-stalked leaves and oval leaflets. The purple flowers appear in many-flowered racemes about 3 inches long, and the glabrous pods are more than half an inch long. This shrub is found in northern and central China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1845.*)

43680. COTONEASTER DIELSIANA E. Pritz. Malaceæ.

A deciduous shrub, about 8 feet high, with ovate leaves and flowers occurring three to seven in a cluster. The round or pear-shaped fruit is scarlet. This shrub is a native of central China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 408.*)

See also S. P. I. No. 40575 for further information.

43681. COTONEASTER HORIZONTALIS Decaisne. Malaceæ.

A low, flat, deciduous shrub, native of China, with branches spreading horizontally and branchlets covered with thick, brown wool. The dark, glossy green leaves are generally oval and up to one-half inch in length. The flowers are white, suffused with pink, are about one-fourth of an inch in diameter, and appear singly or in pairs in May. The globose fruit is bright red, about one-fifth of an inch in diameter. This is one of the handsomest of the cotoneasters and is easily propagated by cuttings. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 411.*)

43675 to 43701—Continued.

43682. COTONEASTER HORIZONTALIS PERPUSILLA C. Schneid. Malaceæ.

A low Chinese shrub, with the branches almost horizontal and roundish oval leaves, less than one-third of an inch long. The flowers are erect and pink, and the bright-red, ovoid fruit has usually three stones. This variety differs from the typical species in having smaller leaves and fruits. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 865.)

43683. DEUTZIA DISCOLOR Hemsl. Hydrangeaceæ.

A shrub 5 or 6 feet in height, native of central and western China. The narrowly oval leaves are dull green and up to $4\frac{1}{2}$ inches in length. The flowers, which vary in color from white to pink, occur in corymbs and are from half an inch to an inch in width. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 481.)

43684. EUONYMUS BUNGEANUS SEMIPERSISTENS (Rehder) C. Schneid. Celastraceæ.

A large glabrous shrub or small tree, from 3 to 5 meters high, with bright-green leaves of a bluish or grayish hue, half evergreen. The yellowish white flowers appear in loose three to seven flowered cymes, and the few fruits are bright pink. This variety differs from the species in having leaves which remain on the plant until midwinter. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 1188, and from *Sargent, Trees and Shrubs*, vol. 1, p. 165.)

43685. EUONYMUS EUROPAEUS LEUCOCARPUS DC. Celastraceæ.

A deciduous shrub or small tree, from 10 to 25 feet in height, forming a spreading, bushy head. The leaves are narrowly oval, and the white flowers occur in cymes about $1\frac{1}{2}$ inches long. The red fruit is from one-half to three-fourths of an inch wide. This shrub is a native of Europe, including the British Isles, and is very striking in autumn when well laden with fruit. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 539.)

43686. EUONYMUS RADICANS CARRIERI (Vauv.) Nicholson. Celastraceæ.

A low, spreading shrub with no inclination to climb, with glossy leaves from 1 to 2 inches long. The greenish flowers occur in clusters of five or more at the end of a slender stalk, and the fruit, which is orange shaped and greenish white or tinged with red, is one-third of an inch in diameter. This may be only a stunted form of the typical species. It is a native of Japan and is cultivated in the New England States. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 542.)

43687. EUONYMUS RADICANS VEGETUS Rehder. Celastraceæ.

A low, spreading shrub up to 5 feet in height, climbing high if placed against a wall. The dull-green, thickish leaves are broadly oval and obtuse, and the greenish white flowers occur in rather dense cymes. The fruit is a greenish white capsule, inclosing a bright-orange aril. Both flowers and fruits appear in great profusion, and it can be recommended as a broad-leaved evergreen for cold regions. (Adapted from *Sargent, Trees and Shrubs*, vol. 1, p. 130 and pl. 65.)

43675 to 43701—Continued.

43688. *EUONYMUS YEDOENSIS* Koehne. Celastraceæ.

A deciduous shrub or small tree, growing 10 feet or more high, with pinkish purple fruit. This shrub is a native of Japan, and in autumn its leaves turn a brilliant red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 543.)

43689. *HYDRANGEA ROSTHORNII* Diels. Hydrangeaceæ.

A shrub up to 12 feet in height, with roundish oval, slender-pointed leaves from 4 to 9 inches in length. The white or purplish sterile flowers occur in cymes 4 to 7 inches wide. This shrub is a native of western China, and the flowers appear in July. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 3, p. 1622.)

43690. *HYDRANGEA XANTHONEURA* Diels. Hydrangeaceæ.

A deciduous shrub about 8 feet in height, of a loose, straggling habit. The leaves, dark green above and pale beneath, are in threes and of an oval shape. The creamy white sterile flowers are in flattish panicles of a width of about 6 inches, and the perfect flowers are dull white and one-fourth of an inch wide. This shrub is a native of central China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 631.)

43691. *HYDRANGEA XANTHONEURA SETCHUENENSIS* Rehder. Hydrangeaceæ.

A shrub up to 15 feet in height, with the last year's branchlets light brown. The narrow, elliptic, bright-green leaves are up to 8 inches long and 4 inches wide, and the white, fertile flowers are in rather loose corymbs from 5 to 10 inches wide, appearing in July. This shrub is a native of western China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 3, p. 1620.)

43692. *HYPERICUM PATULUM HENRYI* Bean. Hypericaceæ.

St.-John's-wort.

A hardy evergreen shrub, native of northern India and the Himalayas, with very large dark-green leaves and large handsome yellow flowers. (Adapted from *Curtis's Botanical Magazine*, pl. 4949.)

See also S. P. I. No. 38153 for further information.

43693. *LESPEDEZA FORMOSA* (Vogel) Koehne. Fabaceæ.
(*L. sieboldii* Miquel.)

An herb, or in warm regions a shrub, up to 2 meters high, throwing up strong, wiry shoots each year from the crown. The stems are hairy, angled, reddish or brown, and the rosy purple flowers, nearly half an inch long, occur in very numerous long, drooping racemes. The pod is about half an inch long and pubescent. This plant, which is a native of Japan and China, is a very desirable late bloomer. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 1845.)

43694. *LIGUSTRUM ACUTISSIMUM* Koehne. Oleaceæ.

Privet.

A much-branched shrub, with the branches often extending almost horizontally. The leaves are narrowly oval, with slender pointed tips. The white flowers occur in dense panicles from three-fifths of an inch to 1½ inches long. This shrub has been found in Hupeh, China. (Adapted from *Urban und Graebner, Festschrift zur Feier Herrn Ascherson*, p. 198, 1904.)

43675 to 43701—Continued.

- 43695.** *LIGUSTRUM OBTUSIFOLIUM* REGELIANUM (Koehne) Rehder. Oleaceæ. **Privet.**

A dwarfed shrub of dense habit, with the branches spreading horizontally. The oblong or narrowly oval leaves are downy beneath, and the white flowers, produced in July, are in terminal, nodding clusters. The glabrous fruit, at first covered with a purplish bloom, is finally black and is smaller than that of the typical species. This shrub is a native of Japan. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 24, 25.)

- 43696.** *LONICERA FERDINANDI* Franch. Caprifoliaceæ. **Honeysuckle.**

A very robust deciduous shrub of spreading, open habit, attaining a height of 8 or 9 feet. The oval dull-green leaves are from 1½ to 4 inches long and are hairy on both sides. The yellow flowers are produced in pairs during June, and the fruit is red. This shrub is a native of Mongolia and China, and it flowers very freely. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 43.)

- 43697.** *LONICERA HENRYI* Hemsl. Caprifoliaceæ. **Honeysuckle.**

An evergreen climbing plant, with oblong leaves and purplish red flowers, produced in clusters of 2 or 3 inches across. The fruit is blackish purple. The plant is a native of China and Tibet. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 45.)

See also S. P. I. No. 40585 for further information.

- 43698.** *LONICERA MAACKII ERUBESCENS* Rehder. Caprifoliaceæ. **Honeysuckle.**

A rather low, spreading shrub, with broadly oval leaves which are dark green above and paler beneath. The flowers are large and tinted with pink, and the fruit is dark red. This variety is found in central China. A very desirable late bloomer. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 4, p. 1910.)

- 43699.** *LONICERA MAACKII PODOCARPA* Franch. Caprifoliaceæ. **Honeysuckle.**

A low, spreading shrub with broadly oval, short-tipped, dark-green leaves. The flowers are white, fading to yellowish, and the fruit is dark red. This shrub, which is a native of central China, is most beautiful in the fall, for the dark-green foliage and the fruits last until November. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 4, p. 1910.)

- 43700.** *MALUS ARNOLDIANA* Rehder. Malaceæ. **Crab apple.**

This is a hybrid of *Malus floribunda* with one of the hybrids of *M. baccata*, and appeared spontaneously in the Arnold Arboretum several years ago. It makes a smaller tree than *M. floribunda*, but its long, spreading and arching branches are very graceful and the flowers produced on long stems are more than twice as large as those of *M. floribunda*. These flowers are a beautiful pink, and it is considered by some persons to be the most beautiful of the crab apples. (Adapted from the *Arnold Arboretum Bulletin of Popular Information*, Nos. 3, 1911, and 39, 1913.)

43675 to 43701—Continued.**43701.** MALUS BACCATA CERASIFERA (Spach) Takeda. Malaceæ.

(Pyrus cerasifera Tausch.)

Crab apple.

This crab apple, very probably a hybrid, makes a large tree with a spreading head. The flowers are large and pure white, and the fruit is variable in size, shape, and color. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 5. 2872.)

43702. GUILIELMA UTILIS Oerst. Phœnicaceæ.**Palm.**

(Bactris utilis Benth. and Hook.)

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received December 7, 1916.

"The most valuable palm, besides *Cocos nucifera* and the date. One of the heaviest bearers per acre of all the fruit trees, the fruit ripening during the greater part of the year. The fruit is orange color, is eaten boiled, generally in salt and water; and is very good. Mixed with sugar many kinds of sweet cakes can be made from it; it is more mealy than the farinaceous tuber roots. This palm grows fairly well on the coast up to 1,100 feet; prefers a damp climate, mountain slopes, and deep soil with plenty of humus. These seeds were taken from well-ripened fruits and dried for two hours in the sun under cover of sackcloth." (Wercklé.)

43703 to 43736.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum and selected by Mr. H. C. Skeels and Dr. W. Van Fleet, of the Bureau of Plant Industry. Received November 20, 1916.

43703. MALUS PRUNIFOLIA RINKI (Koidz.) Rehder. Malaceæ. **Apple.**

(Pyrus prunifolia rinki Bailey.)

A wide-spreading small tree, up to 18 feet high, with pink or pinkish flowers and oval, serrate leaves. This tree yields an edible fruit, sometimes reaching a diameter of 1½ inches, of a greenish or yellowish color and with a bitter-sweet flavor. It was formerly cultivated in Japan for its fruit, but is now chiefly used as a stock for the imported varieties. It is a native of China, where it is sparingly cultivated. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 5, p. 2873.)

43704. MALUS SIEBOLDII ARBORESCENS Rehder. Malaceæ.**Apple.**

(Pyrus sieboldii arborescens Bailey.)

A shrub or tree, up to 30 feet high, with slightly pubescent oval-oblong leaves which become red in autumn. The flowers are often nearly white, and the red or yellow fruits are about the size of peas. The typical species has pink flowers and is always a shrub. This tree is a native of Japan and is cultivated both for ornament and as a stock for breeding purposes. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 5, p. 2874.)

43705. MALUS ZUMI (Mats.) Rehder. Malaceæ.**Apple.**

(Pyrus zumi Mats.)

A small tree of pyramidal habit, with oval or oblong leaves from 1½ to 3½ inches long. The flowers are pink in the bud, becoming white after opening, are 1 to 1¼ inches in diameter, and are produced in clusters of four to seven. The globose, red fruits are half an inch in diameter. This

43703 to 43736—Continued.

tree is a native of Japan and was introduced into North America in 1892. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 300.)

43706. *ROSA ABIETINA* Grenier. Rosaceæ. **Rose.**

A compact shrub, 5 to 7 feet in height with straight, slender, very prickly branches. leaves five, seven, or sometimes nine parted, leaflets from half an inch to $1\frac{3}{4}$ inches long, three-eighths of an inch to 1 inch wide, and rather small rose-colored flowers in one to eight flowered clusters. Known only from Dauphiny and Switzerland. (Adapted from *Schneider, Handbuch der Laubholzkunde*, vol. 1, p. 567.)

43707. *ROSA AMBLYOTIS* Meyer. Rosaceæ. **Rose.**

A stout-branched rose, with dark-purple bark covered with prickles and bristles. The leaves are usually composed of seven leaflets. The flowers are pink and solitary, and the fruits are about half an inch long. This rose has been found in Kamchatka, Siberia. (Adapted from *Meyer, Mémoires L'Académie Impériale des Sciences de St. Petersbourg*, vol. 5, *Botanique*, pp. 30, 31, 1849.)

43708. *ROSA BAICALENSIS* Turcz. Rosaceæ. **Rose.**
(*R. acicularis* Lindl.)

A low-growing rose with densely prickly stems and leaves composed of three to seven leaflets up to 2 inches in length. The solitary deep-rose flowers are from $1\frac{1}{2}$ to 2 inches wide and fragrant. The fruit is pear shaped. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2993.)

43709. *ROSA CANINA* L. Rosaceæ. **Dog rose.**

A robust shrub from 6 to 13 feet high, with stems armed with scattered hooked bristles and leaves composed of five to seven leaflets, sometimes downy. The fragrant white or pinkish flowers occur in clusters, and the egg-shaped or roundish fruits are bright red. This rose, in one or another of its numerous varieties, is found throughout most of the cooler parts of Europe and western Asia and has been naturalized in North America. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 422.)

43710. *ROSA CAUDATA* Baker. Rosaceæ. **Rose.**

This rose is a tall, vigorous shrub, native of western China. It has stout, arching stems, dark-green foliage, and flowers about 2 inches in diameter. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 1, p. 42.)

See also S. P. I. No. 42976 for further information.

43711. *ROSA CHINENSIS* MANETTI Dipp. Rosaceæ. **Manetti rose.**

An upright, vigorously growing rose, with slender branches usually armed with more or less hooked prickles and leaves composed of three to five dark-green shining leaflets. The deep pink flowers are single or semidouble and the fruit is more or less top shaped. This variety has been recommended as a stock for forcing roses, but is not entirely hardy. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2988.)

43712. *ROSA CINNAMOMEA* L. Rosaceæ. **Rose.**
(*R. pendulina* L.)

A strong-growing bush, 6 to 9 feet high, stems erect, much branched near the top, with usually a pair of hooked prickles at the base of the

43703 to 43736—Continued.

leafstalks and numerous others scattered on the stems, especially near the ground. Leaflets usually five or seven, oblong or slightly obovate, 1 to 1½ inches long. Flowers produced either singly or few in a cluster, of varying shades of red, 2 inches across. Fruit globose, or slightly elongated, red, half an inch wide. A native of Europe, Siberia, and northern China; cultivated in England for more than 300 years, but not, as was once believed, a native. The flowers have a somewhat spicy odor, from which the species derives its name. It is regarded as the type of a large group of roses whose leading distinctions are prickles, often in pairs just below the leafstalks, and red, smooth fruit, with a thin skin. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 423.)

43713. *ROSA CORIIFOLIA* Fries. Rosaceæ.

Rose.

A low shrub, up to 5 feet high and thickly branched, with a bluish bloom often appearing on the bark and many hooked spines. The leaves are composed of five to seven roundish oval, hairy leaflets, and the flowers are pink. This rose is found in mountainous parts of Europe and western Asia. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 1, p. 566.)

43714. *ROSA FEROX* Bieb. Rosaceæ.

Rose.

A dwarf, compact little bush, from 1 to 2 feet high, of a rounded form, with numerous decurved prickles. The leaves are composed of five to seven leaflets, coarsely but evenly serrate, and the white flowers, which are either solitary or in clusters of two or three, are from 1 to 1½ inches long. The roundish fruit is red. This rose is a native of the Crimea and Caucasus. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 426.)

43715. *ROSA GAYIANA* Wall. Rosaceæ.

Rose.

A European rose closely allied to *Rosa villosa* L., from which it appears to differ chiefly by its larger, oblong-ovate leaflets. The thorns are straight and the flowers solitary. (Adapted from *Wallroth, Rosae Plantarum Generis Historia Succincta*, p. 171, 1828.)

43716. × *ROSA HIBERNICA* J. E. Smith. Rosaceæ.

Rose.

Var. *grovesii*.

A low shrub with glaucous green foliage and small pink flowers. This rose is a hybrid between *Rosa spinosissima* and *Rosa canina*. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2995.)

43717. *ROSA JUNDZILLI* Besser. Rosaceæ.

Rose.

A bush from 3 to 9 feet in height, the stems armed with scattered, slightly curved prickles. The leaves are composed of five to seven leaflets, densely serrate, and the pink flowers, which are produced singly or in threes, are 3 inches wide. The globose or slightly egg-shaped fruit is bright red. This rose is a native of central Europe and is remarkable for the abundance of sticky glands on the midribs and petioles of the leaves. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 431.)

43718. *ROSA LHERITIERANEA* Thory. Rosaceæ.

Rose.

This rose, supposed to be a hybrid between *Rosa pendulina* and *Rosa chinensis*, climbs to a height of 12 feet, and has slender, sparingly prickly branches. The leaves are composed of three to seven leaflets,

43703 to 43736—Continued.

and the purple flowers, which are double or semidouble, occur very plentifully in nodding corymbs. The color of the flowers varies with lighter and darker shades. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2993.)

43719. ROSA MOSCHATA Mill. Rosaceæ.

Musk rose.

A tall climbing species reaching to the tops of lofty trees, the stems and branches armed with short, scattered, stout-hooked prickles. The leaves are up to 8 inches in length and consist of five to nine narrowly oval leaflets. The flowers are at first pale yellow, changing to almost pure white, are about $1\frac{1}{2}$ inches wide, and are produced in corymbose clusters, often forming an inflorescence over a foot wide. The fruits are red and about one-third of an inch in width. This rose, which has long been cultivated in England, is found from southern Europe to northern India and China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 434.)

43720. ROSA MULTIFLORA CATHAYENSIS Rehd. and Wils. Rosaceæ. **Rose.**

A vigorous, hardy, and handsome rose with the habit of the Japanese *Rosa multiflora*. The pink flowers are produced in large many-flowered clusters. (Adapted from *Sargent, Plantæ Wilsonianæ*, vol. 1, p. 35.)

See also S. P. I. No. 42981 for further information.

43721. ROSA MURIELÆ Rehd. and Wils. Rosaceæ.

Rose.

A slender-branched shrub, up to 8 feet in height, with bristles and slender prickles. The leaves are composed of 9 to 15 glabrous, serrate leaflets. The solitary flowers are pink. This rose is found in eastern three to seven flowered corymbs. The orange-red fruit is from one-half to three-fourths of an inch long. This rose is a native of southwestern China. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2998.)

43722. ROSA OXYODON Boiss. Rosaceæ.

Rose.

A prickly stemmed shrub with leaves composed of five to seven oval leaflets. The solitary flowers are pink. This rose is found in eastern Caucasia, Russia. (Adapted from *Boissier, Flora Orientalis*, vol. 2, p. 674.)

43723. ROSA PRATTII Hemsl. Rosaceæ.

Rose.

A slender-branched shrub, up to 8 feet in height, with numerous bristles and slender prickles. The leaves are composed of 7 to 15 obtuse, serrate leaflets, and the pink flowers, which occur one to three in a cluster, are three-fourths of an inch wide. The scarlet fruit is about one-third of an inch long. This rose is a native of western China. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2998.)

43724. ROSA SPINOSISSIMA L. Rosaceæ.

Scotch rose.

A dwarf bush, rarely more than 3 or 4 feet high, with erect short-branched stems covered with slender spines and stout bristles intermixed. The leaves are composed of five, seven, or nine round or oval leaflets, which are dark green and quite smooth. The white or pale-pink solitary flowers are from $1\frac{1}{2}$ to 2 inches wide, and the globose fruit is dark brown, finally blackish, from one-half to three-fourths of an inch

43703 to 43736—Continued.

in diameter. This rose is very widely spread in Europe and northern Asia and is frequently found in England on dry hills near the sea. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 445.)

43725. *ROSA SPINOSISSIMA* L. Rosaceæ.

Scotch rose.

Var. *fulgens* Bean.

A dwarf bush, from 3 to 4 feet high, with erect short-branched stems. The leaves are composed of five, seven, or nine round or oval leaflets, which are dark green and quite smooth. The bright rose-colored solitary flowers are from 1½ to 2 inches wide, and the globose fruit is dark brown, finally blackish. This rose is widely spread in Europe and northern Asia. The typical species has white or pale-pink flowers. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 445, 446.)

43726. *ROSA VILLOSA* L. Rosaceæ.

Rose.

(*R. pomifera* Herrmann.)

Var. *multiplex*.

A short-branched, stout rose from 4 to 6 feet high, with scattered, slender, broad-based prickles up to half an inch long and leaves up to 7 inches in length. The deep rosy pink flowers are from 1½ to 2½ inches wide, produced in clusters of three to six or more, and the pear-shaped or roundish rich-red fruits are from 1 to 1½ inches long, bristly, and surmounted by the erect sepals. This rose is a native of central Europe. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 439.)

43727. *SORBARIA ARBOREA* C. Schneid. Rosaceæ.

A tree, from 10 to 35 feet high, with the young twigs olive gray. The leaves are lance shaped or more often oblong, with the lower surfaces more or less hairy and the margin serrate. The white flowers are about one-fourth of an inch wide, and the fruit is probably one-sixteenth of an inch in diameter. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 1, p. 490, and from *Sargent, Plantae Wilsonianae*, vol. 1, pp. 47, 48.)

43728. *SORBUS COMMIXTA* Hedl. Malaceæ.

A shrub or tree, native of central and northern Japan, with bright-green, serrate, very variable leaves, usually composed of five to six pairs of glabrous leaflets. The white flowers occur in terminal corymbs, and the bright red, nearly globular fruits are about one-fourth of an inch in diameter. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 1, pp. 677, 678.)

43729. *SYRINGA JAPONICA* (Maxim.) Decaisne. Oleaceæ.

Lilac.

A deciduous tree or shrub up to 30 feet in height, of erect habit. The oval leaves are from 3 to 8 inches long, with a long tapering point, and the white flowers, which are not fragrant, are usually produced at the end of the branch in a pair of broad pyramidal panicles, 8 to 12 inches long. This tree or shrub is a native of Japan. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 567, 568.)

43703 to 43736—Continued.

43730. *VIBURNUM BUREJAETICUM* Regel and Herd. Caprifoliaceæ.

A shrub, 4 to 10 feet high, native of Chosen (Korea). The small light-green leaves and the small umbels of white flowers, followed by the jet-black berries, make this plant very ornamental. (Adapted from a note of Frank N. Meyer, dated Aug. 20, 1906.)

See also S. P. I. No. 20115 for previous introduction.

43731. *VIBURNUM DILATATUM* Thunb. Caprifoliaceæ.

A deciduous shrub, 6 to 10 feet high, with broadly oval, pointed, hairy leaves. The pure white flowers are all fertile and are produced in June in a hairy 5-rayed cyme, 3 to 5 inches wide. The fruit is bright red and roundish oval in shape. The shrub is a native of Japan and China and is a very profuse bloomer. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 647.)

43732. *VIBURNUM HUPEHENSE* Rehder. Caprifoliaceæ. **Honeysuckle.**

A deciduous shrub, native of Hupeh, China, with coarsely serrate, roundish oval leaves and flowers in large flat corymbs. The red fruit is egg shaped, from one-third to two-fifths of an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 650.)

See also S. P. I. No. 42197 for further information.

43733. *VIBURNUM ICHANGENSE* (Hemsl.) Rehder. Caprifoliaceæ.

A slender-branched shrub, with yellowish green, oval, acuminate leaves. The white flowers occur in terminal and lateral corymbs up to 1½ inches wide, and the fruit is an ovoid drupe about one-fourth of an inch long and is red. The seed is brown. This shrub is a native of China. (Adapted from *Sargent, Trees and Shrubs*, vol. 2, p. 105, pl. 150.)

43734. *VIBURNUM SARGENTII* Koehne. Caprifoliaceæ.

A shrub, growing to a height of from 5 to 8 feet, with roundish leaves and flowers in flat corymbs. The rounded fruits are scarlet or orange-scarlet and ripen in September. (Adapted from *Florists' Exchange*, May 20, 1911.)

See also S. P. I. No. 37612 for further information.

43735. *VIBURNUM THEIFERUM* Rehder. Caprifoliaceæ. **Honeysuckle.**

A deciduous shrub of erect habit, up to 12 feet in height, with smooth, gray stems. The narrowly oval leaves are sharply serrate, taper pointed, and dark green above. The white flowers are all perfect and are produced in terminal cymes 1½ to 2 inches in width. The red fruit is egg shaped and nearly half an inch long. This shrub is a native of central and western China. The specific name refers to the use of the leaves by the monks of Mount Omei as a kind of tea. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 657.)

43736. *VIBURNUM WRIGHTII* Miquel. Caprifoliaceæ.

A deciduous shrub, 6 to 10 feet high, with erect stems. The bright-green leaves are 2 to 5 inches in length and are slenderly pointed. The white flowers are all perfect and are produced in May on smooth, downy stalked, 5-rayed cymes, 2 to 4 inches in width. The roundish oval red fruits are one-third of an inch long. This shrub is a native of Japan and China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 660.)

43737 to 43739. PYRUS COMMUNIS L. Malaceæ. Pear.

From Ottawa, Canada. Cuttings presented by the director, Central Experiment Farm. Received December 6, 1916.

"Prof. A. J. Logsdaill, assistant in plant breeding at the Central Experiment Farm, tells me that the varieties of Russian pears constitute a part of an original introduction by the late William Saunders 25 to 30 years ago. Out of a large number of pears brought in from Russia, the following three varieties are the only survivors. They have proved to be very hardy as far as cold resistance is concerned, and have also proved, in a large measure, blight resistant. I saw the three trees growing while at Ottawa last September; they were vigorous specimens, the trunks being 8 to 10 inches in diameter, and they had a fine growth of wood and foliage. I saw no evidence of blight on the trees. The fruit of all three varieties is said to be fairly good. They here partake of all the characteristics of the Russian types." (*B. T. Galloway.*)

43737. "*Bessemianka* (°-7753). Blight resistant and very hardy." (*W. T. Macoun.*)

43738. "*Kurskaya* (°-7705). Particularly blight resistant and very hardy." (*W. T. Macoun.*)

43739. "*Zuckerbirne* (°-7729). Particularly blight resistant and very hardy." (*W. T. Macoun.*)

43740. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino. (*P. sargentii* Rehder.) [Amygdalaceæ. Sargent's cherry.

From Tokyo, Japan. Purchased from the Tokyo Plant, Seed, & Implement Co. Numbered December 9, 1916.

A deciduous tree, 40 to 80 feet in height, with a trunk sometimes 3 feet in diameter and with sharply serrate oval leaves which are often reddish when young. The deep-pink flowers are from 1½ to 1½ inches wide, and are produced in short-stalked umbels with two to six flowers in each umbel. The fruit is a small black cherry, one-third of an inch in diameter. This tree is a native of Japan and is cultivated in England and in the United States. It is probably the finest timber tree among the true cherries and is also remarkable for its beautiful flowers, which appear in April. The seeds germinate freely after lying dormant for a year. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 250, 251.)

43741. TECOMA ARGENTEA Bur. and Schum. Bignoniaceæ.

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received December 1, 1916.

"Seeds of a tree called in Spanish *Para todo* and in Guarani *quirai*. This tree is found in abundance in open fields among palmeras along the upper Paraguay River, both in Paraguayan Chaco and Matto Grosso. The bark is accredited among natives as 'a great remedy' and is also said to be used like quinine. The timber has merit for certain construction purposes." (*Mead.*)

43742. LONICERA SIMILIS DELAVAYI (Franch.) Rehder. Caprifoliaceæ. Honeysuckle.

From Paris, France. Plants purchased from Messrs. Vilmorin-Andrieux Co. Received December 9, 1916.

A half-evergreen climbing shrub, entirely glabrous except for the under surface of the leaves. The leaves are narrow-oval to lance shaped, and the

white flowers are about 2 inches long. This variety, which is found in central and western China, is the only one of this species in cultivation, and it differs from the typical species in the absence of the pubescence. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 4, p. 1914, and from *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 2, p. 729.)

43743 and 43744.

From Darmstadt, Germany. Purchased from Mr. Conrad Appel, through Mr. Julius G. Lay, American consul general, Berlin. Received December 7, 1916.

43743. *AGROSTIS STOLONIFERA* L. Poaceæ. **Creeping bent-grass.**

"Seeds of the true German creeping bent, 1916 crop." (*Appel.*)

43744. *FESTUCA RUBRA* L. Poaceæ. **Red fescue.**

"Seed of the true German red fescue, 1916 crop." (*Appel.*)

43745. *PASSIFLORA MALIFORMIS* × *EDULIS VERRUCIFERA*. Passifloraceæ. **Hybrid granadilla.**

Grown at the Plant Introduction Field Station, Chico, Calif. Numbered December 14, 1916.

"A cross between S. P. I. Nos. 39224, *Passiflora maliformis*, and 35215, *Passiflora edulis verrucifera*." (*R. L. Beagles.*)

43746. *MUCUNA* sp. Fabaceæ.

From Berea, Durban, Natal. Presented by Mr. P. van de Bijl, mycologist, Natal Herbarium. Received December 11, 1916.

"Seeds collected at Umbilo, Durban, Natal, October 29, 1916." (*Van de Bijl.*)

Received as *Canavalia bonariensis*.

43747 to 43753. *AMYGDALUS* spp. Amygdalaceæ. **Peach.**

From Fancheng, Hupeh, China. Seeds presented by Mr. Edwin S. Cunningham, American consul general, Hankow, who procured them from Mr. C. Stokstad. Received December 11, 1916. Quoted notes by Mr. Stokstad.

43747. *AMYGDALUS PERSICA* L.
(*Prunus persica* Stokes.)

"A large peach."

43748. *AMYGDALUS PERSICA PLATYCARPA* (Decaisne) Ricker.
(*Prunus persica platycarpa* Bailey.)

"A small disk-shaped peach."

43749 to 43753. *AMYGDALUS PERSICA* L.
(*Prunus persica* Stokes.)

43749. "A large luscious peach."

43750. "A large peach."

43751. "A downy peach, good for cooking."

43752. "A very large and most luscious peach, from our own orchard."

43753. "A large peach."

43754. PYRUS AMYGDALIFORMIS Vill. Malaceæ. Pear.

From Fresno, Calif. Presented by Mr. George C. Roeding, Fancher Creek Nurseries. Received December 13, 1916.

"Seeds of a pear growing on my place, the bud wood of which I secured in Smyrna, Asia Minor, in 1901, and a portion of which I forwarded to your Department [S. P. I. No. 7669]." (Roeding.)

43755. TIPUANA TIPU (Benth.) Lillo. Fabaceæ. Tipu.
(*T. speciosa* Benth.)

From Cairo, Egypt. Presented by the director, Horticultural Division, Ministry of Agriculture, Gizeh Branch. Received December 6, 1916.

A tall, handsome tree, with rose-colored or creamy white wood, native of the subtropical, temperate, and cool regions of Argentina. (Adapted from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 58.)

See also S. P. I. No. 42331 for further description.

43756 to 43758.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received October 23, 1916.

43756. AMPELOPSIS sp. Vitaceæ.

An ornamental woody vine with handsome, deciduous foliage.

43757. COTONEASTER MULTIFLORA CALOCARPA Rehd. and Wils. Malaceæ.

A shrub, up to 6 feet in height, with usually slender, arching branches and rather large, narrowly ovate leaves. The white flowers occur in many-flowered cymes, and the numerous red fruits are nearly half an inch in diameter. This shrub is a native of western China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, pp. 866, 867.)

43758. COTONEASTER RACEMIFLORA SOONGORICA (Regel and Herd.) C. Schneid. Malaceæ.

An erect shrub, up to 4 feet in height, but rarely prostrate. The leaves are oval and usually somewhat obtuse, and the white flowers, 3 to 12, occur in short-peduncled cymes. The fruit is red. This variety is found in northern China, Caucasia, etc. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 867, and from *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 1, p. 754.)

43759 to 43762.

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received December 13, 1916. Quoted notes by Mr. Bircher.

43759. BRIDELIA RETUSA (L.) Spreng. Euphorbiaceæ.

"A small Indian tree which grows in every kind of soil. It flowers in November, and the black berries hanging in long racemes ripen early in spring. There is not much pulp on them, but they might be improved by continuous culture. A sauce can be prepared with the dry fruits."

43760. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. Yerba maté.

"This tree does well here and stands 110° F. and light frosts. These seeds come from imported trees which are only 4 years old; they germinate in a much shorter time (two to three months) than the seeds from wild trees, which need two or three years to come forth."

43759 to 43762—Continued.

- 43761.** MORINGA OLEIFERA Lam. Moringaceæ. Horse-radish tree.
(*M. pterygosperma* Gaertn.)

"The pods of this variety are free of the bitter taste of the common horse-radish tree and are eaten like French beans if gathered when in a young state."

- 43762.** PSIDIUM PUMILUM Vahl. Myrtaceæ.

"A small shrub with small yellow fruits resembling those of *Psidium araca* in size and color, but with dry calyx segments. The fruit is very aromatic, with a much accentuated strawberry flavor. The leaves resemble the common guava, but are broader."

43763 to 43766.

From Bogota, Colombia. Presented by Capt. H. R. Lemly, Washington, D. C., who received them from Mr. G. E. Child, of Bogota. Received December 4, 1916.

- 43763.** ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

This is the common form of the cherimoya as sold in the markets of Bogota.

- 43764.** CARICA PAPAYA L. Papayaceæ. Papaya.

Seeds of the ordinary papaya sold in the markets at Bogota.

- 43765.** PASSIFLORA LIGULARIS JUSS. Passifloraceæ. Sweet granadilla.

The common form of granadilla sold in the markets at Bogota.

- 43766.** PASSIFLORA MALIFORMIS L. Passifloraceæ. Curubá.

This is the common *curubá* or Colombian granadilla sold in the markets of Bogota.

43767 to 43783.

From Cairo, Egypt. Presented by the director, Horticultural Division, Ministry of Agriculture, Gizeh Branch. Received November 27, 1916.

- 43767.** AESCHYNOMENE ELAPHROXYLON (Guill. and Perr.) Taub. Fabaceæ.
(*Herminiera elaphroxylon* Guill. and Perr.)

A leguminous tree, with compound leaves and yellow flowers, found growing on river banks with its stems in the water in many places in tropical Africa. The hairy pods are often sickle shaped, with two or more joints. When in flower this tree is very ornamental. The wood is exceedingly light and is used by the natives for making small boats and rafts. The only purpose for which this wood might be used commercially is for paper pulp, although it is strong and durable. (Adapted from *Kew, Bulletin of Miscellaneous Information, Additional Series IX*, pp. 199, 200, and from *Engler and Prantl, Natürlichen Pflanzenfamilien*, III, 3, p. 319.)

- 43768.** BELOU MARMELOS (L.) Lyons. Rutaceæ. Bel.
(*Aegle marmelos* Correa.)

This is the *bacl* tree of India, where it attains a height of 40 feet. The leaves are deciduous, and the greenish yellow fruit reaches a diameter of 6 inches. The Hindus are very fond of this fruit. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. I, pp. 222, 223.)

See also S. P. I. No. 43478 for further description.

43767 to 43783—Continued.

43769. BIGNONIA UNGUIS-CATI L. Bignoniaceæ.

A woody climber, with compound evergreen leaves and trumpet-shaped orange-yellow flowers about 2 inches long. This plant, which is a native of Argentina, will stand a little frost if grown in the open in the southern United States and is conspicuous and interesting because of the beauty and profusion of its flowers. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 1, p. 502.*)

43770. CAESALPINIA GILLIESH (Hook.) Wall. Cæsalpiniaceæ.

A shrub or small tree, native of Argentina, with leaves composed of 6 to 10 pairs of leaflets. The yellow flowers, with red stamens, are in large terminal panicles, and the fruit is a sickle-shaped pod. This plant is of value as an ornamental. (Adapted from *Löfgren, Notas sobre as Plantas Exoticas Sao Paulo, p. 39.*)

43771. CANAVALI ENSIFORME (L.) DC. Fabaceæ. Jack bean.

Var. *nanus*. This is a dwarf variety of the common jack bean and is apparently an unpublished garden variety, cultivated at Cairo, Egypt.

43772. CARISSA GRANDIFLORA (E. Mey.) DC. Apocynaceæ. Carissa.

A handsome shrub, originally from South Africa, now cultivated in southern Florida and southern California as an ornamental and for its scarlet edible fruits. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 4, p. 2114.*)

See also S. P. I. No. 41504 for further description.

43773. CASSIA BONARIENSIS Colla. Cæsalpiniaceæ.

An ornamental shrub with handsome compound leaves composed of four pairs of leaflets and racemes of bright-yellow flowers.

43774. DATURA METEL L. Solanaceæ.

An herbaceous plant, found in the western Himalayas and the mountains of West Dekkan Peninsula, and probably introduced into India. The leaves are heart shaped, almost entire, and pubescent, and the flowers are white. This plant is said to possess the same medicinal properties as the other species of this genus. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 3, pp. 39, 40.*)

43775. HAEMATOSYLUM CAMPECHIANUM L. Cæsalpiniaceæ. Logwood.

A tree, up to 40 feet in height, found in the Tropics from southern Mexico to Venezuela. It yields the Campeche wood or logwood of commerce, from which are made dyes and inks and also the chemical reagent hæmatoxylin. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 248.*)

43776. INDIGOFERA DOSUA Buch.-Ham. Fabaceæ.

A shrub, found in the central and eastern Himalayas at altitudes ranging from 6,000 to 8,000 feet. The flowers are said to be eaten as a pot herb in Kangra, India. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 2, p. 385.*)

See also S. P. I. No. 39119 for further description.

**43777. MORINGA OLEIFERA Lam. Moringaceæ. Horse-radish tree.
(*M. pterygosperma* Gaertn.)**

A small tree, cultivated as an ornamental in Cuba, usually about 15 to 20 feet in height, erect, with compound leaves nearly a foot long. The

43767 to 43783—Continued.

white flowers are borne in panicles, and the slender pods are often a foot long. (Adapted from *notes of Wilson Popenoe, July 16, 1915.*)

See also S. P. I. Nos. 40913 and 43761 for further description.

43778. OPERCULINA TUBEROSA (L.) Meisn. Convolvulaceæ.
(*Ipomoea tuberosa* L.)

A perennial stout-stemmed herbaceous vine, with large, compound leaves and three to six yellow flowers on a long peduncle. The entire plant is used as a purgative. It is a native of Brazil. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises, pp. 398 and 567.*)

See also S. P. I. No. 43385 for further description.

43779. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ. **Algaroba.**
(*P. juliflora* DC.)

A leguminous tree, with small flowers in little heads or spikes. The pod is more or less thickened, and the leaves are composed of a large number of leaflets. This tree is a native of Mexico and the West Indies. (Adapted from a *note of W. Harris, Kingston, Jamaica, dated April 7, 1916.*)

See also S. P. I. No. 42643 for further description.

43780. SOLANUM TORVUM Swartz. Solanaceæ.

A shrub, from 8 to 10 feet in height, or sometimes flowering as an herb. The stems are prickly, and the unarmed hairy leaves are 4 inches long and 6 inches wide. The white flowers occur in many-flowered racemes and are about 1½ inches in diameter. This shrub is distributed throughout tropical America, the Philippines, China, and the Malay Archipelago. (Adapted from *Hooker, Flora of British India, vol. 4, p. 234.*)

43781. TECOMA STANS (L.) Juss. Bignoniaceæ.

A shrub found in the West Indies and Central America and sometimes cultivated as far south as Argentina. The leaves are composed of 5 to 11 pairs of lance-shaped leaflets, and the large yellow flowers occur in terminal panicles. The fruit is a silique, bearing a large number of winged seeds. This shrub is valued as an ornamental, both its flowers and its foliage being very attractive, and it readily adapts itself to many kinds of environment. (Adapted from *Löfgren, Notas sobre as Plantas Exoticas Sao Paulo, pp. 195, 196.*)

53782. TITHONIA ROTUNDIFOLIA (Mill.) Blake. Asteraceæ.
(*Helianthus speciosus* Hook.)

A Mexican sunflower, growing to a height of about 5 feet, with a round stem and rather coarse lobed leaves, which are very susceptible to attacks by aphids. The orange-colored flowers of this plant make it very charming. (Adapted from *Curtis's Botanical Magazine, pl. 3295.*)

43783. TRISTANIA CONFERTA R. Br. Myrtaceæ.

A tall tree, with smooth, brown, deciduous bark and dense foliage. The alternate leaves are from 3 to 6 inches long, and the rather large flowers occur in 3 to 7 flowered cymes. This tree is a native of Australia, and the timber, which is very strong and durable, is used in shipbuilding and for making wharves and bridges. The bark is occasionally used for tanning. (Adapted from *Maiden, Useful Native Plants of Australia, pp. 330, 608, 609, and from Bailey, Queensland Flora, part 2, p. 636.*)

43784. DIMOCARPUS LONGAN Lour. Sapindaceæ. Longan.
(*Nephelium longana* Cambess.)

From Foochow, China. Presented by Dr. W. B. Schober, Cocoanut Grove, Fla., who received them from Mr. F. F. G. Donaldson. Received December 12, 1916.

"Dragon's eyes. *Lung leng*. A very delightful fruit." (Donaldson.)

43785. PERILLA FRUTESCENS (L.) Britton. Menthaceæ.
(*P. -ocymoides* L.)

From Yokohama, Japan. Procured from the Yokohama Nursery Co., at the request of the Institute of Industrial Research. Received December 21, 1916.

Numbered and distributed to determine where the seeds can be successfully grown and used for the extraction of oil.

43786. VIGNA CYLINDRICA (Stickm.) Skeels. Fabaceæ. Catjang.

From Keijo, Chosen (Korea). Presented by Miss Katherine Wambold. Received November 13, 1916.

"Used for making *tong pu*. Boil half an hour and season with salt." (Wambold.)

43787 to 43790.

From the city of Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 28, 1916. Quoted notes by Mr. Popenoe.

43787. ZEA MAYS L. Poaceæ. Corn.

"No. 45a. White flint corn purchased in the market of the city of Guatemala. It is said to have been raised near by in the highlands. The ears are large, measuring fully 12 inches in length, and taper gradually toward the tips. There are 12 to 14 rows of hard, white, translucent kernels. October 7, 1916."

43788. ACHRADELPHA VIRIDIS (Pittier) O. F. Cook. Sapotaceæ.

Green sapote.

"No. 69a. Fifty seeds from fruits purchased in the market of the city of Guatemala. November 12, 1916."

For description, see S. P. I. No. 43439.

43789. ZEA MAYS L. Poaceæ. Corn.

"No. 67a. One ear of corn, presented by Señor Don Manuel Lemus, Director of Agriculture. This is of an interesting variety, called by Señor Lemus *Zea guatemalensis*. It originated in the Department of Zacatepequez, but this seed was grown in the vicinity of Guatemala. According to Señor Lemus this corn contains very little gluten, grows to a great height, and has proved to be a very valuable strain. November 12, 1916."

43790. ZEA MAYS L. Poaceæ. Corn.

"No. 68a. One ear of corn, presented by Señor Don Manuel Lemus, Director of Agriculture. This is the variety called by Señor Lemus *Zea guatemalensis*. It is a selected strain, slightly improved over the form sent under No. 67a [S. P. I. No. 43789], the ears being somewhat larger and having 14 rows of kernels. According to Señor Lemus as many as 16 rows have been found on some ears. November 12, 1916."

43791 to 43796.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received December 21, 1916. Quoted notes by Mr. Meyer.

43791. *ULMUS PUMILA* L. Ulmaceæ.

Elm.

"Var. *pendula* Hort. (No. 1258. Peking, China. November 9, 1916.) Cuttings of a weeping form of the ordinary, very drought and alkali resistant elm from North China and Manchuria. The Chinese graft this variety on the trunk of the common form, generally from 5 to 8 feet above the ground. See S. P. I. No. 40507 for further information. Obtained from the Botanic Garden at Peking."

43792. *WISTARIA VENUSTA* Rehd. and Wils. Fabaceæ.

"(No. 1259. Peking, China. November 6, 1916.) Cuttings of a vigorously growing hardy species of wistaria, blooming at the end of April and early May, bearing multitudes of rather short and dense racemes of individually large flowers, which are of a purplish violet color when first coming out, but when fading away become of pale bluish color. They exhale a delightful scent. This species is quite drought resistant and tolerates a fair amount of alkali. The Chinese most often train it as an arbor over a garden walk or over an open space, underneath which seats and tables can be arranged for enjoyment of the beauty and fragrance of the flowers in spring and the shade of the foliage during the hot summer months. Chinese name *Teng lo*, meaning 'Winding rattan.' Obtained from the Botanic Garden at Peking."

43793. *PUNICA GRANATUM* L. Punicaceæ.

Pomegranate.

"(No. 1260. Peking, China. November 9, 1916.) Plants of a very dwarf form of pomegranate cultivated as an ornamental pot plant, said to bear sometimes as many as 100 fruits on one specimen. The fruits are too small to be of any economic value. Chinese name *Pai tze sheh liu*, meaning 'One hundredfold bearing pomegranate.'"

43794. *WISTARIA VENUSTA* Rehd. and Wils. Fabaceæ.

"(No. 2321a. Peking, China. November 9, 1916.) The same as No. 1259 [S. P. I. No. 43792]. The Chinese claim that among plants raised from seeds one obtains a great variety of colors in the flowers, ranging all the way from pure white to dark purple. Obtained from the Botanic Garden at Peking."

43795. *WISTARIA VENUSTA* Rehd. and Wils. Fabaceæ.

"(No. 2322a. Tientsin, China. November 1, 1916.) The same species as the preceding number [S. P. I. No. 43794], but coming from a colder locality. Collected in Victoria Park, Tientsin."

43796. *PINUS BUNGEANA* Zucc. Pinaceæ.

Pine.

"(No. 2323a. Lungen Temple, Sankiatien, near Peking, China. October, 1916.) The well-known Chinese white-barked pine; 100 catties of seeds, collected for the department through the kindness of Mr. J. V. A. MacMurray, First Secretary of the American Legation at Peking."

43797. *ROSA XANTHINA* Lindl. Rosaceæ.

Rose.

Grown at the Plant Introduction Field Station, Rockville, Md. Numbered December 27, 1916.

Seedlings of S. P. I. No. 21620 from a plant grown in Mr. Edward Goucher's garden.

43798. ACACIA CONSTRICTA Benth. Mimosaceæ.

Collected west of the Organ Mountains of New Mexico by Dr. David Griffiths, of the Bureau of Plant Industry. Received December 21, 1916.

"A spiny shrub 3 to 6 feet high. It is one of the most common of our desert covers from southwestern Texas to southern Arizona and thrives even in regions receiving but 8 to 9 inches of rainfall. The inflorescence is yellow, globular, prolific, and exceedingly attractive for several weeks when the shrub is in blossom. It is one of the good bee plants of the Southwest, being closely related to the *cat's-claw* and *huajillo*. The shrub will be a useful ornament in California, and possibly farther north in the coast country. It habitually withstands a temperature of zero without injury." (*Griffiths.*)

43799 to 43801. JUGLANS REGIA L. Juglandaceæ. Walnut.

From Srinagar, Kashmir, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens, Seharunpur, who secured these walnuts from Mr. H. C. Koul, manager, Koul's Fruit Gardens. Received December 19, 1916.

43799. "*Kaghazi*. These are not very good walnuts. The best ones are expected shortly and we fear they, too, will not be the best, as all Kashmir fruit has been more or less injured this year by a long drought followed by excessive rain. Such a season occurs here once in 12 or 24 years." (*Koul.*)

43800. "*Burzul*. These are the larger of the two kinds. They are about the best, but not the very best." (*Koul.*)

43801. "*Wantu*. These are not very good, but the kernel is good enough and more oily than the other varieties." (*Koul.*)

43802 to 43807. JASMINUM spp. Oleaceæ. Jasmine.

From Ventimiglia, Italy. Cuttings presented by the La Mortola Gardens. Received December 26, 1916.

43802. JASMINUM AZORICUM L.

A climbing shrub from the island of Madeira with opposite, evergreen, compound leaves, and terminal clusters of white, fragrant flowers, which appear throughout the year under favorable circumstances. It has been long cultivated in temperate greenhouses and is propagated by cuttings. (Adapted from *Curtis's Botanical Magazine*, vol. 44, pl. 1889, and from *Bailey, Standard Cyclopedia of Horticulture*, vol. 3, p. 1718.)

43803. JASMINUM HETEROPHYLLUM Roxb.

A stout shrubby jasmine from Natal, with shiny, alternate, narrowly oval leaves, up to 5 inches long. The flowers are yellow, up to one-third of an inch long, and occur in compound cymes. (Adapted from *Hooker, Flora of British India*, vol. 3, pp. 601, 602.)

43804. JASMINUM ODORATISSIMUM L.

A diffuse shrub from the Madeira Islands, becoming rather large at times, with straight, stiff branches, alternate leaves composed of three to five shining oval leaflets, and terminal clusters of yellow flowers, which appear in summer. It is odorous, though not more so than many jasmines. It is comparatively hardy and may be propagated by cuttings. (Adapted from *Curtis's Botanical Magazine*, vol. 7, pl. 285, and from *Bailey, Standard Cyclopedia of Horticulture*, vol. 3, p. 1719.)

43802 to 43807—Continued.**43805. JASMINUM OFFICINALE L.**

A long, slender, scarcely self-climbing plant, native of India and Persia, but now widely cultivated throughout the warmer portions of the earth. The leaves have two or three pairs of sharp-pointed leaflets, and the white flowers occur in terminal more or less leafy clusters. In the southern United States the glossy foliage and the white summer-blooming flowers make the plant very attractive, and with protection it will grow as far north as Philadelphia. (Adapted from *Curtis's Botanical Magazine*, vol. 1, pl. 31, and from *Bailey, Standard Cyclopedia of Horticulture*, vol. 3, p. 1718.)

43806. JASMINUM SIMPLICIFOLIUM Forst. f.

A climbing shrub or sometimes a tree, found in Australia and the Friendly Islands, with opposite, shiny, oval leaves usually less than 3 inches long and white flowers about half an inch long, in terminal, branched, many-flowered clusters. It may be propagated by cuttings; it flowers in June and July. (Adapted from *Curtis's Botanical Magazine*, vol. 25, pl. 980, and from *Bailey, Standard Cyclopedia of Horticulture*, vol. 3, p. 1717.)

43807. JASMINUM SINENSE Hemsl.

A climbing shrub from central and southern China, with papery leaves composed of three oval or narrowly oval leaflets up to 3, or, occasionally, 6 inches long. The white flowers are 1½ inches long and occur in dense cymose panicles. (Adapted from *Forbes and Hemsley, Jour. Linn. Soc.*, vol. 26, pp. 80, 81.)

43808. CORCHORUS CAPSULARIS L. Tiliaceæ.**Jute.**

From Amoy, China. Presented by Messrs. E. F. Spears & Sons, Paris, Ky., who received it from Mr. Chan Goan Sin, Amoy. Received December 22, 1916.

"Jute is an annual plant, requiring a rich, moist, well-drained, alluvial soil and a warm, moist climate, free from frost for at least six months. It will grow in sandy loam or alluvial soils from Maryland to Florida and Texas, but will not ripen much seed north of the cotton belt. The seed is sown broadcast, the crop harvested by hand, retted in water, and the fiber cleaned by hand from the wet stalks in the water. It could be grown profitably in this country if there were satisfactory methods of removing the fiber from the stalks and preparing it for market. The fiber is used for burlaps, bagging, and gunny sacks." (*L. H. Dewey.*)

43809. ZIZIPHUS JUJUBA Mill. Rhamnaceæ.**Jujube.***(Z. sativa Gaertn.)*

From Keijo, Chosen (Korea). Presented by Miss Katherine Wambold. Received November 13, 1916.

"*Tai chu*. Eaten as they are and much used at feasts." (*Wambold.*)

43810 to 43925.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum and selected by Mr. H. C. Skeels and Dr. W. Van Fleet, of the Bureau of Plant Industry. Received November 23, 1916. The following plants and cuttings:

43810 to 43925—Continued.

43810. ACER CISSIFOLIUM (Sieb. and Zucc.) Koch. Aceraceæ. **Maple.**

A deciduous Japanese maple of compact, rounded habit, becoming 30 feet or more high, with leaves composed of three leaflets up to $3\frac{1}{2}$ inches in length. The minute flowers are produced in May with the leaves, and the keys, which are about an inch long, occur in long racemes. In autumn the foliage turns red and yellow. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, pp. 137, 138.)

43811. ACER MIYABEI Maxim. Aceraceæ. **Maple.**

A deciduous Japanese maple growing from 30 to 40 feet high, with a trunk up to $1\frac{1}{2}$ feet in diameter and deeply 3-lobed leaves. The flowers are yellow and downy, appearing in corymbs 2 to 3 inches long, and the keys are up to an inch in length. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 148.)

43812. ACER RUFINERVE Sieb. and Zucc. Aceraceæ. **Maple.**

A small, deciduous Japanese maple, with smooth, bluish white, young shoots and dark-green, irregularly serrate, 3-lobed or obscurely 5-lobed leaves. The flowers occur in erect racemes about 3 inches long, and the keys are up to three-fourths of an inch long. Occasionally the young foliage, the leafstalks, and the midribs are red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, pp. 157, 158.)

43813. ACER TETRAMERUM Pax. Aceraceæ. **Maple.**

A tree from central and western China, with oval or oblong leaves from 2 to $3\frac{1}{2}$ inches long and staminate flowers in few-flowered sessile racemes. The keys are slender stalked and the nutlets are thick and strongly veined. It is graceful, hardy, and variable, and reaches a height of 25 feet. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 1, p. 202.)

43814. AMYGDALUS NANA L. Amygdalaceæ. **Russian almond.**
(*Prunus nana* Stokes.)

A bush from Russia and western Asia, growing to a height of 3 to 5 feet, with thick, rather stiff, sharply serrate, lance-shaped leaves. The pinkish or white flowers are usually solitary and about an inch wide, and the small, hard fruit is hairy and bitter and contains a large, wrinkled, sharp-pointed pit. In Europe this bush is cultivated for its flowers. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2832.)

43815 and 43816. AMYGDALUS PERSICA L. Amygdalaceæ. **Flowering peach.**
(*Prunus persica* Stokes.)

43815. A double, pale pink-flowered ornamental variety of the common peach.

43816. A double, red-flowered variety.

43817. BERBERIS AGGREGATA C. Schneid. Berberidaceæ. **Barberry.**

(Wilson No. 1050. From thickets in the Min Valley, western Szechwan, at altitudes of 1,300 to 2,300 meters. October, 1908.)

A shrub from western China, 3 to 5 feet high, with yellowish brown spines in clusters of threes, rather small oval-oblong leaves with a few

43810 to 43925—Continued.

distant serrations, yellow, almost sessile flowers about a quarter of an inch wide in dense racemes, and salmon-red fruits. (Adapted from *Schneider, Bulletin L'Herbier Boissier, series 2, vol. 8, p. 203*, and from *Sargent, Plantae Wilsonianae, vol. 1, p. 375*.)

43818. *BERBERIS BRACHYPODA* Maxim. Berberidaceæ.

Barberry.

(No. 7175.)

A bush from western China, 4 to 7 feet high, with 3-parted spines, oval serrate leaves, yellow flowers in long slender panicles, and scarlet fruits which are up to half an inch in diameter. In its native country this barberry grows at elevations of 5,200 to 11,700 feet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 375*, and *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 922*.)

43819. *BERBERIS CIRCUMSERRATA* C. Schneid. Berberidaceæ. **Barberry.**

"No. 604 Purdom. Originally from the Tai-peí-shan, Shensi, China."

A bush from central China, up to 7 feet high, with roundish oval leaves with very numerous and slender spine-tipped serrations. The spines are 3-parted, about half an inch long, and the bright-yellow flowers, half an inch wide, are solitary or in twos or threes on a common stalk. The scarlet fruits are oblong, slightly bloomy, and nearly a half inch long. In autumn the leaves turn scarlet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 354*, and from *Bailey, Standard Cyclopædia of Horticulture, vol. 1, p. 491*, as *Berberis diaphana*.)

For a later and more complete technical description, see *Plantae Wilsonianae, vol. 3, p. 435*.

43820. *BERBERIS JULIANAE* C. Schneid. Berberidaceæ.

Barberry.

A western Chinese shrub up to 7 feet in height, with 3-cleft spines up to $1\frac{3}{8}$ inches long; thick, leathery, narrowly oval leaves up to 3 inches long; small yellow flowers; and, probably, pruinose fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 361*.)

43821. *BERBERIS POIRETI* C. Schneid. Berberidaceæ.

Barberry.

A shrub found in northern China and Amurland, with slender, arching branches and spines about one-third of an inch long. The leaves are narrowly lance shaped, about an inch long and green beneath. The yellow flowers occur in many-flowered racemes from 1 to 2 inches long, and the deep blood-red fruits are oval oblong. This shrub is hardy and handsome, but is not often found in cultivation. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 1, p. 490*.)

43822. *BERBERIS POIRETI* C. Schneid. Berberidaceæ.

Barberry.

"Purdom No. 250."

See previous number, S. P. I. 43821, for description.

43823. *BERBERIS SARGENTIANA* C. Schneid. Berberidaceæ.

Barberry.

A black-berried barberry from western Hupeh, China, reaching a height of 7 feet. It is the only evergreen barberry which has proved entirely hardy at the Arnold Arboretum. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 359*.)

For further data, see S. P. I. No. 42973.

43810 to 43925—Continued.

43824. BERBERIS SUBCAULIALATA C. Schneid. Berberidaceæ. **Barberry.**

(Wilson No. 1267. From thickets at Mupin, western Szechwan, at altitudes of 2,000 to 2,300 meters, October, 1908.)

A thickly branched shrub from Tibet, up to 4½ feet high, with spines up to an inch in length, thick-skinned, lance-shaped leaves about an inch long, and globular, reddish yellow fruits one-fourth of an inch in diameter. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 919.*)

43825. BERBERIS TISCHLERI C. Schneid. Berberidaceæ. **Barberry.**

(Wilson No. 4385. From thickets at Tatsienlu, western Szechwan, at altitudes of 3,200 to 3,400 meters, October, 1910.)

A shrub from western China, 7 to 14 feet high, with spines in threes, papery spine-tipped leaves up to 1½ inches in length, and yellow flowers about two-fifths of an inch wide, occurring in dense racemes. The somewhat pruinose egg-shaped red fruits appear in October and are up to two-fifths of an inch long. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 355.*)

43826. BERBERIS YUNNANENSIS Franch. Berberidaceæ. **Barberry.**

A deciduous shrub, from 3 to 6 feet high, with dense, rounded spines and nearly circular leaves. The flowers are pale yellow, and the berries are bright red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 253.*)

See also S. P. I. No. 40153 for further description.

43827. BETULA GROSSA Sieb. and Zucc. Betulaceæ. **Birch.**

A tree found on the higher mountains of Japan, attaining a large size, with stout branches and wide-spreading crowns. The leaves are oval and from 2 to 4 inches long, unequally serrate, and hairy in the lower surfaces. The strobiles are oval egg shaped and are nearly sessile. The bark of the branchlets has a cherry flavor. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 478.*)

43828. BETULA SCHMIDTII Regel. Betulaceæ. **Birch.**

A large tree with thick branches, found only in the Province of Shimotsuke, Hondo, Japan. It grows up to 65 feet tall, with a trunk 3½ to 7½ feet thick and black bark which falls off in thick, rather small plates. The finely serrate leaves are short stemmed, and the catkins are narrow, stiff, and erect. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, pp. 475, 476.*)

43829. BUDDLEIA STENOSTACHYA Rehd. and Wils. Loganiaceæ.

A shrub of western China with narrowly oblong leaves 2 to 6 inches long and usually three long, slender, terminal panicles of fragrant lavender flowers with orange-colored eyes. This species is tender and flowers during the winter in the greenhouse. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 1, pp. 585, 586.*)

43830. BUXUS MICROPHYLLA JAPONICA (Muell. Arg.) Rehd. and Wils. Buxaceæ. **Japanese box.**

An evergreen Japanese shrub of loose habit, from 3 to 4 feet high, with the young stems conspicuously winged. The roundish leaves are up to three-fourths of an inch long, and the flowers, which are produced very freely in March and April, are of no beauty. Owing to its ungainly

43810 to 43925—Continued.

habit and unhealthy aspect it is one of the least ornamental of the boxes. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 277.)

43831. CARAGANA ARBORESCENS Lam. Fabaceæ.

Pea tree.

A deciduous Siberian shrub of erect habit, up to 20 feet in height, which by pruning may be made to take the form of a small tree. The pinnate leaves are from 1½ to 3 inches long, and the yellow flowers are up to seven-eighths of an inch long and are produced singly on thin downy stalks. The pods are about 2 inches long and contain from three to five oblong seeds. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, pp. 287, 288.)

43832. CASTANEA HENRYI (Skan) Rehd. and Wils. Fagaceæ.

Chestnut.

A tree from 50 to 65 feet in height, found in the Province of Shantung, China. It is closely related to the common American chinquapin, but has larger dimensions throughout, including the nuts, which are edible. (Adapted from *Dode, Notes Dendrologiques*, in *Bulletin de la Société Dendrologique de France*, No. 6, pp. 156, 157, 1908.)

See also *Plantae Wilsonianae*, vol. 3, pp. 196–197, for full discussion and description.

43833. CLEMATIS TANGUTICA (Maxim.) Korsh. Ranunculaceæ.

A deciduous, woody, climbing plant from central Asia growing 8 or 10 feet high, with raggedly serrate gray-green leaflets. The rich yellow flowers are solitary, and the fruits are crowned with long feathered styles. This is said to be the handsomest yellow-flowered clematis in cultivation, the flowers sometimes being 4 inches wide. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 367.)

43834. CLETHRA BARBINERVIS Sieb. and Zucc. Clethraceæ. **White alder.**

A shrub or tree from eastern Asia, up to 30 feet high, with oval-oblong, pointed, sharply serrate, hairy veined leaves from 3 to 6 inches long and paniced racemes of white fragrant flowers, which appear from July to September. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 802.)

43835. COTONEASTER BULLATA Bois. Malaceæ.

A deciduous shrub from western China and Tibet, from 10 to 12 feet high, with a few long arching branches. The dark-green oval or oblong leaves are up to 3½ inches long, and the rosy white flowers are in corymbs of from 10 to 30. The brilliant red fruit is pear shaped or round and one-third of an inch wide. The beauty of this plant lies in the fruit and not in the flowers. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 407.)

43836. COTONEASTER BULLATA FLORIBUNDA (Stapf) Rehd. and Wils. Malaceæ. [*C. moupinensis floribunda* Stapf.]

A shrub with nearly oval, dark-green, bullate leaves up to 3 inches in length. The flowers are white tinged with pink, but are of little ornamental value because they fall soon and are of small size. The globose red fruits occur abundantly in September on the upper side of the long arching shoots and give the plant a very beautiful appearance. This shrub is found in western China. (Adapted from *Curtis's Botanical Magazine*, vol. 135, pl. 8284.)

43810 to 43925—Continued.

43837. CRYPTOMERIA JAPONICA (L. f.) D. Don. Pinaceæ.

An evergreen pyramidal tree, 100 to 180 feet high in Japan. The general aspect of the tree is yellowish green in summer and dark green in winter. It is one of the great timber trees of the world, more used in Japan than any other. It likes a deep, good soil, a sheltered position, and abundant rainfall. It is a variable tree. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 438.)

43838. CYTISUS NIGRICANS ELONGATUS Borkh. Fabaceæ. Black broom.
"Var. *Carlieri* Hort."

A deciduous European shrub, from 2 to 4 feet high, with erect, pubescent branches and long-stemmed leaves composed of oval, pubescent leaflets up to an inch in length. The yellow flowers occur in very slender racemes from 3 to 8 inches in length. This variety differs from the typical species in that it blooms a second time in the autumn at the top of the elongated fruiting racemes. (Adapted from *Bailey, Standard Cyclopedic of Horticulture*, vol. 2, p. 948.)

43839. DECUMARIA SINENSIS Oliver. Hydrangeaceæ.

A climbing shrub from central China with generally oblong or obtuse leaves up to 3 inches in length and small white flowers in terminal corymbs. The fruit is a capsule filled with numerous minute seeds. This shrub is very ornamental because of its handsome, glossy foliage and its white flowers, which are very fragrant. It thrives in almost any humid soil and is propagated by greenwood cuttings in summer under glass, and rarely by seeds. (Adapted from *Bailey, Standard Cyclopedic of Horticulture*, vol. 2, p. 974.)

43840. DEUTZIA HYPOLEUCA Maxim. Hydrangeaceæ.
(*D. discolor* Maxim., not Hemsl.)

A Japanese shrub with sharp-pointed, serrulate, oval leaves with hairy lower surfaces and flowers either solitary or in clusters of two or three. The fruits are capsules about one-eighth of an inch long. (Adapted from *Maximowicz, Bulletin Academie Imperiale*, vol. 32, pp. 487.)

43841. DIERVILLA CORAEENSIS (Thunb.) DC. Caprifoliaceæ.
(*D. grandiflora* Sieb. and Zucc.)

A Japanese shrub from 6 to 10 feet high, with oval, long-pointed leaves 3 to 5 inches long, with bristly leafstalks. The flowers are pale pink at first, changing to carmine, and are produced during June in corymbs of three flowers each. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 491.)

43842. DIERVILLA JAPONICA SINICA Rehder. Caprifoliaceæ.

A shrub from central China, up to 20 feet high, with oval-oblong, serrate, slender-stemmed leaves. The rose-pink bell-shaped flowers are usually in 3-flowered cymes. (Adapted from *Bailey, Standard Cyclopedic of Horticulture*, vol. 2, p. 1008.)

43843. DIERVILLA MIDDENDORFFIANA Carr. Caprifoliaceæ.

A low shrub from Siberia, northern China, and Japan, with serrate leaves and yellowish white flowers which are spotted orange or purplish inside and occur in small terminal or axillary clusters. It is hardy, but rarely does well in cultivation and should have a cool and moist climate and be sheltered from strong winds. (Adapted from *Bailey, Standard Cyclopedic of Horticulture*, vol. 2, p. 1009.)

43810 to 43925—Continued.

43844. DIERVILLA MIDDENDORFFIANA Carr. Caprifoliaceæ.

"Var. *Maximowiczii*."

Apparently an undescribed horticultural variety.

43845. ENKIANTHUS CAMPANULATUS (Miquel) Nicholson. Ericaceæ.

A Japanese shrub, 15 or occasionally 30 feet high, with elliptic leaves up to 3 inches long and yellowish or pale-orange flowers with darker veins borne in drooping racemes. One of the handsomest species and the most vigorous grower. In autumn the foliage turns a brilliant red. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1115.*)

43846. ENKIANTHUS CERNUUS RUBENS (Maxim.) Makino. Ericaceæ.

A Japanese shrub up to 15 feet high, with bright-green, serrate leaves from 1 to 2 inches long, red flowers one-third of an inch long, and capsules on hanging stalks turned upward at the end. In the typical species the flowers are white. It is hardy in Massachusetts and is propagated by seeds sown in the spring, by cuttings of ripe wood under glass in spring, by greenwood cuttings in summer, and by layering. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1115.*)

43847. EUONYMUS RADICANS ACUTUS Rehder. Celastraceæ.

A low, procumbent shrub from central China, with climbing and rooting branches and elliptic, sharp-pointed leaves having dull-green upper surfaces and white veins. The greenish white flowers are in slender cymes, and the fruit is a pale pink, globular capsule. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1188.*)

43848. HYDRANGEA OPULOIDES SERRATA (Thunb.) Rehder. Hydrangeaceæ.
(*H. serrata* DC.)

A Japanese bush growing about 1½ feet high, with elliptic, serrate, sharp-pointed leaves from 2 to 4 inches long and pinkish or bluish flowers in flat cymes. (Adapted from *Dippel, Handbuch der Laubholzkunde, vol. 3, pp. 325, 326, fig. 173.*)

43849. HYPERICUM PATULUM HENRYI Bean. Hypericaceæ.

St.-John's-wort.

A spreading evergreen Chinese shrub, 1½ to 3 feet high, with smooth, purplish, 2-edged branches, oval, obtuse leaves 2 to 3 inches long, and yellow flowers 2 to 2½ inches wide. This variety is hardier than the other forms of this species and grows more vigorously. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1631.*)

43850. INDIGOFERA AMBLYANTHA Craib. Fabaceæ.

Indigo.

An upright shrub from central China, 3 to 6 feet high, with compound bright-green leaves from 4 to 6 inches long, very numerous small pink flowers in slender, axillary racemes and linear, hairy pods. The pink flowers bloom all summer long, and the shrub is propagated by cuttings and seeds. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1646.*)

43851. LARIX POTANINI Batal. Pinaceæ.

Larch.

A tree from western China, from 60 to 70 feet high, with yellowish young shoots and somewhat pointed leaves about an inch long. The cones are egg shaped and about 1½ inches long. This tree has much the

43810 to 43925—Continued.

aspect of the common larch, and, according to Mr. E. H. Wilson, yields the most valuable timber in China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 9.)

43852. *LIGUSTRUM ACUTISSIMUM* Koehne. Oleaceæ. Privet.

Seeds of this plant were introduced under S. P. I. No. 43694.

43853. *LIGUSTRUM QUIHOU* Carr. Oleaceæ. Privet.

A small or medium-sized privet, native of Shensi, China, found growing in rocky banks. The masses of small black berries contrast well with the evergreen foliage. (Adapted from a note of Frank N. Meyer, dated July 10, 1914.)

See also S. P. I. No. 38807 for further description.

43854. *LONICERA CHAMISSOI* Bunge. Caprifoliaceæ. Honeysuckle.

An upright shrub up to 1 meter tall. The branchlets are smooth; the leaves are oval to ovate, rounded at both ends, seldom pointed, distinctly veined. The corolla is smooth, deep violet, and about 12 mm. long; the red berries are profusely produced. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 2, p. 713.)

43855. *LONICERA RAMOISSIMA* Franch. and Savat. Caprifoliaceæ. Honeysuckle.

A very handsome Japanese honeysuckle with oval, hairy leaves up to an inch in length and long-stemmed yellowish flowers. The fruits are scarlet and give the plant a striking appearance. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 4, p. 1914.)

43856. *LONICERA TRICHOSANTHA* Bur. and Franch. Caprifoliaceæ. Honeysuckle.

A deciduous bush, reaching a height of 8 feet, with oval, dull-gray leaves. The flowers are pale yellow, and the berries are red. It is a native of Szechwan, China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 59.)

See also S. P. I. No. 40185 for further description.

43857. *MALUS ARNOLDIANA* Rehder. Malaceæ. Crab apple.

Seeds of this plant were introduced under S. P. I. No. 43700.

43858. *MALUS SARGENTI* Rehder. Malaceæ.

A bushy shrub from 3 to 5 feet high, with oval leaves up to 3 inches in length. The pure white flowers are an inch wide, and the fruit is bright red. It is a native of Japan. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 293.)

See also S. P. I. No. 41572 for further description.

43859. *MORUS ACIDOSA* Griffith. Moraceæ. Mulberry.

Usually a broad shrub from 3 to 16 feet high, found in Hupeh and Szechwan, China, but occasionally it forms a tree up to 25 feet in height. The leaves are variable in size and shape and are not used for feeding silkworms. The fruits when ripe are shining black or dark red and are palatable. A native name is *Ai-sang*. (Adapted from *Sargent, Plantæ Wilsonianæ*, vol. 3, p. 300.)

43860. *PHILADELPHUS SATSUMANUS* Siebold. Hydrangeaceæ.

An erect, Japanese shrub, from 6 to 8 feet high, with oval, long-pointed leaves up to 6 inches in length. The slightly scented flowers are white,

43810 to 43925—Continued.

about 1½ inches wide, and are produced in erect racemes, with 5 to 11 flowers in each raceme. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 140.)

43861. PINUS ARMANDI Franch. Pinaceæ.

Pine.

A medium-sized pine, native of Shensi, China, producing large cones full of large edible seeds, which are collected by the priests in the temples. (Adapted from a note of Frank N. Meyer, dated June 8, 1914.)

See also S. P. I. No. 38468 for further description.

43862. POPULUS MAXIMOWICZII A. Henry. Salicaceæ.

A magnificent poplar, the largest in eastern Asia, becoming 100 feet high and 6 feet in diameter. The pale-brown branchlets are densely pubescent, and the nearly circular leaves, which are whitish or rusty beneath, are about 4 inches long. The fruiting catkins are from 7 to 10 inches long, remaining on the tree unopened until late summer or autumn. The shapely head and attractive foliage make this hardy poplar very desirable. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2763.)

43863. PRINSEPIA UNIFLORA Batal. Amygdalaceæ.

A spiny shrub, native of Shansi, China, growing to a height of 3 to 5 feet. The pale rosy flowers appear in early May, and the dark-red fruits are juicy but sour. (Adapted from a note of Frank N. Meyer, dated Nov. 17, 1914.)

See also S. P. I. No. 39432 for further description.

43864. PRUNUS APETALA (Sieb. and Zucc.) Franch. and Savat. Amygdalaceæ.

A shrub or tree from Japan, with oblong or oval-oblong leaves which are deeply and doubly serrate and 1 to 2 inches long. The flowers have deep purple calyces and petals which are very small and which fall off very soon. In this country this cherry is little known in cultivation. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2842.)

43865. PRUNUS CERASIFERA DIVARICATA (Ledeb.) C. Schneid. Amygdalaceæ.

A small tree, native of Caucasia, reaching a height of 10 or 12 feet. The white flowers are solitary, and the yellowish fruit is about an inch long. (Adapted from *Nicholson, Dictionary of Gardening*, vol. 3, p. 235.)

See also S. P. I. No. 37463 for further description.

43866. PRUNUS GRAYANA Maxim. Amygdalaceæ. Gray's bird cherry.

A small tree from 20 to 30 feet high, native of Japan. The leaves are finely serrate, and the white flowers are borne in erect racemes up to 4 inches long. The fruit is black, about the size of a pea. This cherry grows in the mountain forests in its native country and is very uncommon in cultivation. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 237.)

43867. PRUNUS MAXIMOWICZII Rupr. Amygdalaceæ.

A deciduous tree, up to 20 or 30 feet high, with oval leaves and dull yellowish white flowers. The globose fruit is one-sixth of an inch in diameter and black when ripe. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 243.)

See also S. P. I. No. 40189 for further description.

43810 to 43925—Continued.

43868. *PRUNUS PILOSIUSCULA BARBATA* Koehne. Amygdalaceæ.

A shrub or tree of western China, sometimes up to 40 feet in height, with deeply serrate, oval, or oblong leaves with tufts of hair on the lower surfaces, pink, usually solitary flowers, and oblong red fruits. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2836, and from *Sargent, Plantæ Wilsonianæ*, vol. 1, p. 203.)

43869. *PRUNUS PROSTRATA* Labillard. Amygdalaceæ. **Bush cherry.**

A bush cherry found on stony and sterile mountain slopes in the Province of Samarkand, Turkestan. It bears multitudes of small red cherries of a sour taste. (Adapted from a note of Frank N. Meyer, dated July 9-11, 1910.)

See also S. P. I. No. 28945 for further description.

43870. *PRUNUS SUBHIRTELLA ASCENDENS* (Makino) Wilson. Amygdalaceæ.

A tall, strong tree, native of central China and probably also in Chosen (Korea) and Japan, with wide-spreading branches but few branchlets, causing the head to have a thin appearance. The flowers are rosy pink with red calyces, and the very small, globular, blackish red cherries are somewhat astringent. It is cultivated in Japan and has been recently introduced into the United States. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2841.)

43871. *PRUNUS TOMENTOSA ENDOTRICHA* Koehne. Amygdalaceæ.

A deciduous shrub from 4 to 8 feet high or a tree up to 22 feet in height found in western Hupeh and northern Shensi, China. The flowers are white, tinted with rose. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 256, and from *Sargent, Plantæ Wilsonianæ*, vol. 1, p. 225.)

See also S. P. I. No. 42576 for further description.

43872. *AMYGDALUS TRILOBA* (Lindl.) Ricker. Amygdalaceæ.
(*Prunus triloba* Lindl.)

Var. *Simplex*. A flowering peach much cultivated in the gardens of northern Chihli. The colors of its flowers range from pale pink to a dark violet rose. (Adapted from a note by Frank N. Meyer, dated July 23, 1913.)

See also S. P. I. No. 36718 for further description of the species.

This seems to be an unpublished garden variety with single flowers.

43873. *RHAMNUS DAVURICUS NIPPONICUS* Makino. Rhamnaceæ.

A large, spreading Japanese shrub with stout thorny branches and narrowly oblong leaves, with pale-green lower surfaces, up to 6 inches in length. The flowers occur in 2 to 5 flowered clusters, and the fruit is black. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2924.)

43874. *RHAMNUS JAPONICUS* Maxim. Rhamnaceæ.

A Japanese shrub up to 8 or 9 feet in height, with glossy, pale-green leaves from 1 to 3 inches long and greenish brown flowers produced in May in dense clusters at the ends of short branches. The round fruit is a quarter of an inch in diameter. This shrub flowers with great freedom, and the flowers have a faint, pleasant fragrance. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 334.)

43810 to 43925—Continued.

43875. RHUS TRICHOCARPA Miquel. Anacardiaceæ.

A deciduous tree, native of Japan, growing from 20 to 25 feet high, with compound leaves from 12 to 20 inches long, very downy on both sides. The inconspicuous flowers occur in slender long-stalked panicles, and the fruits are large, pale, prickly drupes, ripening in August and September. This tree is hardy in the United States, where the leaves turn a deep orange red in autumn. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 395.)

43876. RIBES FASCICULATUM CHINENSE Maxim. Grossulariaceæ.

This shrub from northern China grows to a height of 4 feet, with somewhat heart shaped, 3 to 5 lobed leaves up to 5 inches in width, persisting until the beginning of the winter. The small greenish flowers are dioecious, and the bright scarlet berries remain on the branches all winter. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2960.)

43877. RIBES LURIDUM Hook. f. and Thoms. Grossulariaceæ.

An unarmed shrub from the Himalayas and western China, with glabrous red branchlets and 3 to 5 lobed leaves up to 2 inches in width. The dark purple flowers occur in upright racemes, and the fruits are black and glabrous. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2964.)

43878. ROSA AMBLYOTIS Meyer. Rosaceæ.

Rose.

The seeds of this plant were introduced under S. P. I. No. 43707.

43879. ROSA BANKSIOPSIS Baker. Rosaceæ.

Rose.

A very common rose in western Hupeh, China, found on mountain slopes at altitudes of from 4,000 to 7,000 feet. The flowers are rose red, and the fruits are coral red. (Adapted from *Sargent, Plantæ Wilsonianæ*, vol. 2, p. 322.)

See also S. P. I. No. 42974 for further description.

43880. ROSA BELLA Rehd. and Wils. Rosaceæ.

Rose.

A shrub, up to 8 feet in height, with leaves composed of seven to nine leaflets. The solitary pink flowers are 1½ to 2 inches wide, and the scarlet fruit is ovoid and three-quarters of an inch long. This rose is a native of northwestern China. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2997.)

43881. ROSA BELLA Rehd. and Wils. Rosaceæ.

Rose.

"Purdum No. 314. Mountains in northwest Shansi, April, 1910."

See previous number, S. P. I. No. 43880, for description.

43882. ROSA CAUDATA Baker. Rosaceæ.

Rose.

The seeds of this plant were introduced under S. P. I. No. 43710.

43883. ROSA CAUDATA Baker. Rosaceæ.

Rose.

"Wilson No. 4418. From thickets, Fanghsien, western Hupeh, at an altitude of 6,500 feet, October, 1910."

This rose is a tall, vigorous shrub up to 13 feet in height, native of western China. It has stout, arching stems, dark-green foliage, flowers about 2 inches in diameter, and orange-red fruits. (Adapted from *Sargent, Plantæ Wilsonianæ*, vol. 2, p. 321.)

See also S. P. I. No. 42976 for further information.

The seeds of this plant were introduced under S. P. I. No. 43710.

43810 to 43925—Continued.

- 43884.** *ROSA CORYMBULOSA* Rolfe. Rosaceæ. Rose.

An unarmed or sparingly prickly rose from central China. The numerous small flowers, which are deep rose above and white at the base, are from three-quarters to an inch wide. (Adapted from *Kew Bulletin of Miscellaneous Information, New Garden Plants of the Year, 1915, p. 80.*)

See also S. P. I. No. 42977 for further description.

- 43885.** *ROSA CORYMBULOSA* Rolfe. Rosaceæ. Rose.

"Wilson No. 625 (7170-1). From thickets at Hsingshanhsien, western Hupeh, at altitudes of 1,300 to 3,600 feet, November, 1907."

See S. P. I. No. 43884 for description.

- 43886.** *ROSA DAVIDII* Crép. Rosaceæ. Rose.

A pink-flowered rose from western Szechwan, China, reaching a height of 16 feet and growing at altitudes of 1,600 to 3,000 meters. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 322.*)

See also S. P. I. No. 42978 for further description.

- 43887.** *ROSA DAVURICA* Pall. Rosaceæ. Rose.

This rose, which is allied to the Cinnamon rose, is found in Manchuria, Dahuria, and Sakhalin, and has slender, straight prickles. The flowers are purple and the fruit scarlet. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2997.*)

- 43888.** *ROSA ECAE* Aitch. Rosaceæ. Rose.

A very spiny, shrubby rose, flowering in early summer, with an abundance of small, deep-yellow flowers. Recommended for hybridization to create perfectly hardy yellow roses. (Adapted from a note of *Frank N. Meyer, dated July 10, 1910.*)

See S. P. I. 28978 for further description.

- 43889.** *ROSA EGLANTERIA* L. Rosaceæ. Rose.

A dense shrub, originally from Europe, of compact habit and with bright-green foliage, giving off a very agreeable aromatic odor. The flowers are bright pink and the fruit is orange-red. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2990.*)

- 43890.** *ROSA FEDTSCHENKOANA* Regel. Rosaceæ. Rose.

A very handsome rose from the Turkestan and Kokand regions of central Asia. It is a much-branched, very prickly shrub, with compound leaves 4 to 5 inches long and large white flowers occurring singly or as many as four in a cluster. The red fruits are somewhat pear shaped. When introduced into England this rose developed into a rambling, free-growing shrub, which flowered in the month of June. (Adapted from *Curtis's Botanical Magazine, vol. 127, pl. 7770.*)

- 43891.** *ROSA FILIPES* Rehd. and Wils. Rosaceæ. Rose.

"Wilson No. 1228. From thickets near Wenchuan Hsien, western Szechwan, at altitudes of 4,000 to 7,000 feet; November, 1908."

A shrub producing long runners, reaching a height of 15 feet, with a few hooked prickles. The leaves are composed of five to seven serrate leaflets, and the fragrant, white flowers occur in large, loose corymbs, the individual flowers being about an inch across. The scarlet, globose fruits are up to half an inch in diameter. This rose is a native of western China. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2997.*)

43810 to 43925—Continued.

43892. *ROSA FILIPES* Rehd. and Wils. Rosaceæ. **Rose.**

See previous number, S. P. I. No. 43891, for description.

43893. *ROSA FOETIDA* Herrmann. Rosaceæ. **Austrian briar rose.**

A shrub with long, slender runners or climbing stems, becoming 10 feet high, usually with straight thorns. There are from five to nine dark-green, doubly serrate leaflets in the compound leaves, and the bright-yellow flowers, which have an unpleasant odor, are from 2 to 2½ inches wide. The fruits are globular. This rose is a native of western Asia. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2995.)

43894. *ROSA GENTILIANA* Lev. and Van. Rosaceæ. **Rose.**

A shrub with long runners, growing up to 2 feet in height, with scattered hooked thorns. The leaves are composed of five glabrous serrate leaflets, and the white, fragrant flowers are up to 1½ inches wide and occur in corymbs. The fruits are globose and dark red. This rose is a native of central China. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2997.)

43895. *ROSA HELENÆ* Rehd. and Wils. Rosaceæ. **Rose.**

A vigorous, hardy shrub with bright-green foliage, native of western China. The pure white flowers are 1½ inches in diameter and delicately fragrant. (Adapted from *Sargent, Plantæ Wilsonianæ*, vol. 1, p. 39.)

See also S. P. I. No. 42979 for further description.

43896. *ROSA HELENÆ* Rehd. and Wils. Rosaceæ. **Rose.**

"Wilson No. 666. From woodlands, Wushanhsien, western Hupeh, at altitudes of 3,300 to 5,000 feet, December, 1907."

See previous number, S. P. I. No. 43895, for description.

43897. *ROSA HELENÆ* Rehd. and Wils. Rosaceæ. **Rose.**

"Wilson No. 431b. From thickets at Patunghsien, western Hupeh, at altitudes of 2,000 to 4,000 feet, June, 1907."

See S. P. I. No. 43895 for description.

43898. *ROSA JACKII* Rehder. Rosaceæ. **Rose.**

A long-stemmed rose with the stems lying flat on the ground. It is a native of Chosen (Korea), and has pure white flowers 2 or more inches in diameter. (Adapted from *Arnold Arboretum Bulletin of Popular Information*, vol. 1, p. 43.)

See S. P. I. No. 42980 for further description.

43899. *ROSA LAXA* Retz. Rosaceæ. **Rose.**

This rose, which is found from Turkestan to Songaria and Altai, is an upright shrub with paired, hooked thorns. The leaflets are small and light green, and the flowers are small and white. The small fruits are oval-oblong. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2998.)

43900. *ROSA MACROPHYLLA* Lindl. Rosaceæ. **Rose.**

A shrub, native of the Himalayas and western China, becoming 8 feet or more in height, with erect stems and arching branches, usually furnished with straight prickles up to half an inch in length. The leaves, which are composed of 5 to 11 leaflets, are up to 8 inches in length. The

43810 to 43925—Continued.

deep pink or red flowers are up to 3 inches in width and are produced singly or in clusters of varying number. The elongated pear-shaped fruit is bright red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 433.)

43901. *ROSA MOYESII* Hemsl. and Wils. Rosaceæ.

Rose.

"Wilson No. 1495a."

This rose from western China grows from 6 to 10 feet in height and has erect stems armed with scattered broad-based spines. The compound leaves are from 3 to 6 inches long, and the flowers, which are a lurid dark red, are from 2 to 2½ inches wide and occur singly or in pairs. The bottle-shaped fruits are red and crowned by the erect persistent sepals. This is a very hardy rose, and in its native country it is found at elevations of 9,000 feet and over. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 435.)

43902. *ROSA MULTIBRACTEATA* Hemsl. and Wils. Rosaceæ.

Rose.

A rose from western China growing about 6 feet high, with straight paired thorns. The leaves are composed of seven to nine broadly oval leaflets, and the pink flowers, which occur in corymbs or singly, are 1½ inches wide. The ovoid fruit is orange-red with persistent sepals. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 5, p. 2998.)

43903. *ROSA MULTIFLORA CATHAYENSIS* Rehd. and Wils. Rosaceæ.

Rose.

The seeds of this plant were introduced under S. P. I. No. 43720.

43904. *ROSA OMEIENSIS* Rolfe. Rosaceæ.

Rose.

A stout, branched shrub, from 3 to 10 feet high, with the young shoots covered with dense bristles and the older stems armed with stout, straight thorns. The long, green leaves are composed of 9 to 13 sharply serrate leaflets, and the white flowers, which are over an inch in diameter, occur singly on short lateral twigs. The bright-red fruits are up to half an inch in length, and their yellow stalks are very striking in autumn. These fruits are said to be eaten in China, where the plant grows at elevations of 8,000 to 9,000 feet. It thrives in good loamy soil and may be propagated from the freely produced seeds. (Adapted from *Curtis's Botanical Magazine*, pl. 8471.)

43905. *ROSA OMEIENSIS PTERACANTHA* (Franch.) Rehd. and Wils. **Rose.**
(*R. sericea pteracantha* Franch.) Rosaceæ.

This Chinese rose is found in the Province of Yunnan and differs from the typical species in having the stems covered with much-flattened spines, which are short and compressed and whose bases are very broad. The white flowers are solitary, and the fruit is pear shaped and bright red. (Adapted from *Franchet, Plantae Delavayanae*, p. 220, and from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 438.)

43906. *ROSA POUZINI* Tratt. Rosaceæ.

Rose.

This rose, from southern Europe and northern Africa, rarely exceeds 7 feet in height. The leaves are composed of five to seven or sometimes nine serrate leaflets, and the small flowers are pale or deep pink, rarely white. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 1, p. 563.)

43810 to 43925—Continued.

43907. *ROSA PRATTII* Hemsl. Rosaceæ. **Rose.**

A slender-branched shrub, up to 8 feet in height, with numerous bristles and slender prickles. The leaves are composed of 7 to 15 obtuse, serrate leaflets, and the pink flowers, which occur one to three in a cluster, are three-quarters of an inch wide. The scarlet fruit is about one-third of an inch long. This rose is a native of western China. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 5, p. 2998.*)

The seeds of this plant were introduced under S. P. I. No. 43723.

43908. × *ROSA RUBELLA* J. E. Smith. Rosaceæ. **Rose.**

This is a hybrid between *Rosa spinosissima* and *Rosa pendulina*. It has dark-green foliage, red flowers, and pendulous, oval-oblong, scarlet fruits. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 5, p. 2995.*)

43909. *ROSA RUGOSA* × *MACROPHYLLA*. Rosaceæ. **Rose.**

This is apparently a hybrid of recent origin, from the Arnold Arboretum.

43910. *ROSA SATURATA* Baker. Rosaceæ.

This rose from central China is a shrub about 8 feet in height, nearly unarmed, with compound, sharply serrate leaves. The solitary flowers are dark red with purplish anthers and are about 2 inches wide. The nearly round fruit is coral red and three-quarters of an inch long. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 5, p. 2998.*)

43911. *ROSA SATURATA* Baker. Rosaceæ. **Rose.**

"Wilson No. 316. A bush 3 to 7 feet tall with rose-red flowers and coral-red fruits from thickets at Fanghsien, western Hupeh, at elevations of 5,000 to 7,000 feet, July and September, 1907."

See previous number, S. P. I. No. 43910, for description.

43912. *ROSA SERTATA* Rolfe. Rosaceæ. **Rose.**

A shrub of elegant habit, up to 5 or more feet in height. The flowers are purplish rose, and the fruit is bright red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 443.*)

See also S. P. I. No. 40193 for further description.

43913. *ROSA SPINOSISSIMA* L. Rosaceæ. **Scotch rose.**

"Yellow."

The seeds of this plant were introduced under S. P. I. No. 43724.

43914. *ROSA SPINOSISSIMA HISPIDA* (Sims) Koehne. Rosaceæ. **Rose.**

This rose, which is probably a native of Siberia, has stems thickly covered with straight thorns and attains a height of 4 or 5 feet. The leaves are compound and serrate, and the solitary flowers are pale yellow. This rose is cultivated in England and is said to be perfectly hardy. (Adapted from *Curtis's Botanical Magazine, vol. 37, pl. 1570.*)

43915. *ROSA SWEGINZOWII* Koehne. Rosaceæ. **Rose.**

A rose from western Szechwan, with deep pink flowers, growing to a height of 16 feet at altitudes of 2,300 to 3,600 meters. The stems are covered with short, stout, flattened prickles. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 324.*)

43810 to 43925.—Continued.

43916. *ROSA XANTHINA* Lindl. Rosaceæ. Rose.

A remarkably hardy yellow rose, found in the vicinity of Peking, Chihli, China. It resists drought and extremes of heat and cold to an unusual degree. (Adapted from a note of Frank N. Meyer, dated March 31, 1908.)

See also S. P. I. Nos. 17469, 22452, and 23034 for further description.

43917. *RUBUS PILEATUS* Focke. Rosaceæ.

A woody climber from the Province of Hupeh, China, reaching 4 feet in height, with pinnate leaves composed of five pairs of leaflets. The flowers, two to four, occur at the ends of the branches, and the fruits, which are about an inch in diameter, are edible and pleasant in taste. (Adapted from *Hooker's Icones Plantarum*, vol. 20, p. 3, under pl. 1952.)

43918. *SAGERETIA PYCNOPHYLLA* C. Schneid. Rhamnaceæ.

A climbing, spiny shrub from western China, up to 7 feet high, with opposite branches, small, opposite oval leaves up to three-quarters of an inch long, and small sessile flowers in spikelike terminal and axillary racemes. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, pp. 226, 227.)

43919. *SAMBUCUS CALLICARPA* Greene. Caprifoliaceæ.

Red-berried elder.

A shrub, very common in wet ground on the coast of the northwestern United States, attaining a height of 7 to 15 feet, with smooth, brown bark, leaves composed of five to seven lance-oblong, serrate leaflets 2 to 5 inches long, pyramidal panicles of cream-colored flowers, and bright scarlet, sometimes chestnut-colored, rarely yellow berries. (Adapted from *Piper and Beattie, Flora of the Northwest Coast*, p. 337.)

43920. *SPIRAEA LUCIDA* Dougl. Rosaceæ.

A low shrub found at low elevations in the mountains of the western United States. It reaches a height of about 24 inches and has small white flowers and coarsely serrate leaves. It is hardly distinguishable from the typical species found in the East. (Adapted from *Piper and Beattie, Flora of the Northwest Coast*, p. 202.)

43921. *SPIRAEA MEDIA* Schmidt. Rosaceæ.

An erect shrub, found from eastern Europe to Japan and Sakhalin and growing to a height of 6 feet, with oval or oblong, more or less serrate leaves up to 2 inches in length. The small white flowers are produced late in the spring in long-stalked racemes. It is an ornamental species, but is liable to be injured by late spring frosts. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 639.)

43922. *SYRINGA REFLEXA* C. Schneid. Oleaceæ.

Lilac.

A bush from western China, 7 to 10 feet high, with oval, sharp-pointed leaves and violet flowers in long, hanging racemes. On account of the remarkable inflorescence of this lilac it is quite distinct from all others of its kind. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 2, p. 779, and from *Sargent, Plantae Wilsonianae*, vol. 1, p. 297.)

43810 to 43925—Continued.

- 43923.** *THEA JAPONICA* (L.) Baill. Theaceæ. **Camellia.**
(*Camellia japonica* L.)

An evergreen shrub, native of Japan and China, sometimes becoming a small tree up to 40 feet in height, with deep, glossy green leaves 3 to 4 inches long and solitary red flowers, 2½ to 4 inches wide, appearing at the end of the branchlets. The oil expressed from the seeds is used by the Japanese women for dressing their hair. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, pp. 284, 285.)

- 43924.** *VIBURNUM HUPEHENSE* Rehder. Caprifoliaceæ. **Honeysuckle.**

Seeds of this plant were introduced under S. P. I. No. 43732.

- 43925.** *VIBURNUM THEIFERUM* Rehder. Caprifoliaceæ. **Honeysuckle.**

The seeds of this plant were introduced under S. P. I. No. 43735.

- 43926.** *CARICA PAPAYA* L. Papayaceæ. **Papaya.**

Grown at the Plant Introduction Field Station, Miami, Fla. Received December 19, 1916.

"Seeds from selected fruits." (*Simmonds*.)

- 43927.** *ANNONA CHERIMOLA* Mill. Annonaceæ. **Cherimoya.**

From the city of Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 28, 1916.

"No. 66a. Seeds of the cherimoya, or *anona* as it is called here. These are from choice fruits, mainly from Antigua, but are sent in principally for the purpose of producing stock plants on which to bud superior varieties of the cherimoya. In Florida this may not be the best stock for the cherimoya, but in California it seems to be the only species so far tested which is suitable. November 12, 1916." (*Popenoe*.)

For an illustration of the Guatemalan cherimoyas, see Plate VIII.

- 43928 to 43930.** *CARICA PAPAYA* L. Papayaceæ. **Papaya.**

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Agricultural Experiment Station. Received December 18, 1916.

"Probably in no other region has systematic improvement of the papaya been given so much attention as in Hawaii. Mr. J. E. Higgins and others have attempted to breed superior strains which would reproduce themselves when propagated by seed and strains which would remain regularly hermaphroditic, thus eliminating the necessity of planting staminate trees. The papaya is an important breakfast fruit in Hawaii. In few other regions is it so highly esteemed and in few are there varieties of such excellent quality." (*Popenoe*.)

43928. "No. 2355: 1."

43930. "No. 4325."

43929. "No. 3681."

- 43931.** *PERSEA SCHIEDEANA* Nees. Lauraceæ. **Coyó.**

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received December 29, 1916.

"No. 73. From Sepacuite, Department of Alta Vera Paz. The *coyó*, a fruit closely allied to the avocado, which is evidently the same species as the *chucte*, or *shucte*, sent in from El Rancho under No. 72. It is said to vary greatly in

character of fruit, some being inferior and others very choice, as in the avocado. The tree from which this bud wood was taken stands by the porch of the old house at Finca Sepacuite and is said by Mr. Kensett Champney to produce fruits of very good quality." (*Popenoe*.)

43932 to 43935. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Guatemala. Bud sticks collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received December, 1916, to July, 1917.

43932. "(Nos. 74, 95, 155. Avocado No. 8.) *Coban*. This variety enjoys something of a reputation in Coban as an avocado of unusually fine quality. In addition, it has a small seed and other good characteristics, which combine to make it a promising sort.

"The parent tree stands in the sitio of Filadelfo Pineda, in Coban, Department of Alta Vera Paz. The elevation is 4,325 feet. The ground beneath the branches is given out to a vegetable garden, with the exception of that to the east side, which is cut off by a tall hedge of chichicaste (*Loasa speciosa*). The soil is a heavy clay loam, probably underlain by stiff clay. According to the owner, the tree is 30 or more years of age. It is about 40 feet high, with a dense, dome-shaped crown fully 40 feet broad. The trunk is 18 inches in diameter at the base, branching some 10 feet from the ground. At the present time the tree is badly attacked by several insect pests and does not appear to be in good condition. It appears normally to be reasonably vigorous in growth, the young branches being somewhat slender, but not very brittle. The bud wood furnished by the tree is fairly good, the eyes being well developed and showing no tendency to drop at an early stage. The twigs are at times slender and angular.

"The climate of Coban is mild; hence, there is nothing to indicate that this variety will be any hardier than the average of the Guatemalan race.

"The flowering season is February and March. Up to a few years ago the tree is said to have borne large crops of fruit, but at present it does not seem to be doing so well, perhaps owing to the weakened condition of the tree as a result of the attacks of insects and other pests. When first examined in December, 1916, there were only a few fruits on the tree, perhaps a dozen, and after the flowers which were produced in 1917 had fallen only a few fruits were found to be left on the tree for the next season, most of them having fallen before they attained the size of walnuts. They were malformed, as though from the attacks of some parasite. The ripening season is said to be February to March, a few fruits being picked in December and January and some hanging on the tree until April or May.

"This is a fruit of medium size, weighing about 15 ounces. In form it is pear shaped, tending to obovoid. The surface is slightly rough, deep green in color, while the skin is moderately thick, hard, and woody. The flesh is of unusually deep yellow color, quite free from discoloration of any kind, smooth and oily, and of unusually rich flavor. The seed is rather small in comparison to the size of the fruit and is perfectly tight in the seed cavity.

43932 to 43935—Continued.

"The variety may be formally described as follows: Form obovoid, obovoid-pyriform, slightly oblique; size above medium, weight 15 ounces, length $4\frac{1}{2}$ inches, greatest breadth $3\frac{3}{8}$ inches; base rounded, the stem inserted obliquely without depression; apex rounded; surface slightly rough, deep green in color with a few small yellowish dots; skin moderately thick, one-eighth of an inch or slightly more, coarsely granular; woody and brittle; flesh deep yellow in color, changing to pale green near the skin, of fine, smooth texture and free from discoloration of any sort, the flavor rich and pleasant; quality excellent; seed rather small in comparison to the size of the fruit, roundish oblate in form, about $1\frac{3}{4}$ ounces in weight, with both seed coats adhering closely and fitting tightly in the seed cavity." (*Popenoe*.)

43933. "No. 75. From San Cristobal Vera Paz, December 14, 1916. *Chilan*. Avocado No. 9, from the dooryard of an Indian in the southwest quarter of the village of San Cristobal. A very attractive small fruit, selected first for its earliness in ripening and secondly for its productiveness and good quality.

"It is more or less pear shaped, weighs about half a pound, is nearly smooth externally and of a bright green color, while the seed is unusually small and the flesh is of a good quality for an early-ripening variety. It is noteworthy that nearly all the early varieties I have found in Guatemala are inferior in richness of flavor to those which ripen later, and it also seems that a great many of them have large seeds. This was especially notable in the fruits examined around Antigua. Form elliptic pyriform, not distinctly necked; size below medium, weight 8 to 9 ounces, length $3\frac{1}{2}$ inches, breadth $2\frac{1}{4}$ inches; base narrowly pointed, the stem inserted almost squarely without depression; apex obliquely flattened though not conspicuously so; surface nearly smooth, bright green in color, with numerous minute yellowish dots; skin one-sixteenth to nearly one-eighth of an inch thick, coarsely granular and woody, brittle; flesh cream color, tinged with pale green near the skin, free from fiber, and of smooth, firm texture; flavor nutty, pleasant, not so oily as in some of the later varieties; quality good; seed small in comparison with the size of the fruit, broadly elliptic to spherical in form, weight 1 ounce, both the seed coats rather thin and adhering closely to the smooth cotyledons. The parent tree is about 45 feet high, with a spread about equal in height. The trunk is 2 feet thick at the base. Apparently the fruits must commence to ripen in October or November, since a great many have already fallen, as indicated by the quantity of fresh seeds beneath the tree. A large proportion of the fruits left on the trees seem still to be immature, so that this variety can probably be considered to have a very long season. The tree is carrying an enormous crop, as may be expected of one whose fruits are of this size. It is probably safe to say that it will produce more than 2,000 fruits this season. This has every appearance of being a very desirable variety." (*Popenoe*.)

43934. "(Nos. 76, 96, 156, 188. Avocado No. 10.) *Kashlan*. In quality this is one of the finest avocados in the set. It has the additional advantage of good size, convenient shape for handling, and a seed which is unusually small in size. Taken all round, this is an exceptionally

43932 to 43935—Continued.

promising variety, and it ripens earlier than many others, which makes it particularly worthy of trial in California, where early-ripening varieties of the Guatemalan race are greatly desired.

"The parent tree stands among coffee bushes in the sitio of Diego Muus, in the town of San Cristobal Vera Paz. The elevation here is 4,550 feet. Close to the tree, on the west, is a much larger avocado tree which crowds it considerably, and there is an Inga tree a few feet away on another side. The tree must be considered, therefore, to be growing under unfavorable surroundings. The soil is a heavy clay loam, blackish, and very fertile. While the owner is not certain as to the exact age of the tree, it is thought to be 8 or 10 years old. It stands about 25 feet high, with a slender, open crown rather sparsely branched. The trunk is 8 inches thick at the base, branching about 8 feet above the ground. The tree bears every indication of being a strong grower; the young branchlets are stout, long, and extremely healthy in appearance. The wood is no more brittle than the average. The bud wood furnished by the tree is excellent, having strong, vigorous eyes which are not inclined to drop at an early stage. The twigs are smooth, round, stout, with the eyes conveniently placed for cutting buds, i. e., not too close together.

"No frosts occur in San Cristobal Vera Paz; hence, there is no means of determining whether varieties growing here are hardier than the average or not. Until further evidence is obtained in the United States it must be assumed that varieties from elevations such as that of San Cristobal Vera Paz are of average hardness.

"The flowering season is February. The tree is said to have come into bearing three years ago. It produced an excellent crop the past season, considering the size of the fruit and the unfavorable conditions under which the tree is growing. In 1917 it set no fruit. The crop which developed in 1916 was picked in January and February, 1917, when the fruit was considered to be mature. None were left on the tree, so it is impossible to say how late the fruits might hang on if they were allowed to do so.

"This fruit is broadly oval in form, slightly oblique, and weighs 20 to 22 ounces. It is green in color when ripe, practically smooth on the surface, with hard, brittle, but not unusually thick skin. The flesh is smooth, deep yellow in color, clean, and free from fiber. The flavor is very rich and pleasant. The seed is unusually small, weighing but 2 ounces, and fits tightly in its cavity.

"Following is a formal description of the variety: Form broadly oval, slightly oblique; size very large, weight 20 to 22 ounces, length $4\frac{1}{2}$ inches, breadth 4 inches; base obliquely flattened, the stem inserted without depression; apex obliquely flattened, slightly depressed around the stigmatic point; surface pebbled, deep green in color, with numerous rather large yellowish dots; skin one-sixteenth of an inch thick, slightly thicker over some portions of the fruit, coarsely granular, and brittle; flesh of an unusually rich yellow color, changing to pale green near the skin, free from fiber or discoloration and of very rich flavor; quality excellent; seed very small in proportion to the size of the fruit, oblate, weighing 2 ounces, tight in the cavity, with both seed coats adhering closely to the cotyledons, which are slightly rough for this race." (*Popenoe*.)

43932 to 43935—Continued.

43935. "(Nos. 77, 97, 157, 189. Avocado No. 11.) *Chisoy*. As a commercial variety this avocado seems to be particularly promising. In form and size it is almost identical with the *Trapp* avocado of Florida, but it has a smaller seed. The quality is excellent, and the tree has borne two heavy crops in succession, which indicates that it will probably be as satisfactory in this respect as any in the set. Taken all around, No. 11 seems to be one of the best of all.

"The parent tree is growing in the cafetal (coffee plantation) of Señor Don Eusebio de la Cruz, in the town of San Cristobal Vera Paz. The elevation is 4,550 feet. Señor de la Cruz is the alcalde or mayor of San Cristobal and owns coffee plantations containing many aguacate trees, but he always reserves the fruits of this particular one for his private consumption and to present to his friends. Beneath the broad-spreading branches of this tree are numerous large coffee bushes, which benefit by the shade cast by the avocado. The soil is a heavy, blackish, clay loam of excellent fertility. No one knows the exact age of the tree; it is very large and probably very old. Fifty years can probably be set as the minimum. It is fully 50 feet high, with a broad-spreading, much-branched crown which is 60 feet in diameter. The trunk of the tree is 4 feet thick at the base. It branches about 12 feet above the ground. The growth seems to be quite vigorous, though the young branchlets are not so long as they would be if the tree were much younger. The wood is no more brittle than the average, and the branchlets are well formed and stout. The bud wood furnished by this tree is good; owing to the age of the tree the twigs are not so long as would be desired for most convenient handling, but the eyes are well formed and show no tendency to drop at an early stage.

"The hardiness of the variety can not be ascertained, since there is no frost at San Cristobal. Until subjected to cold weather in the United States it can only be assumed that the variety is of an average hardiness for the Guatemalan race.

"The flowering season is slightly later than the average, the tree being in full bloom on April 1, 1917. The crop produced from the 1916 bloom was very large. No count could be obtained, but it may be said that the bearing habit of the tree, as indicated by the 1916 and 1917 crops, seems highly satisfactory. In spite of the heavy crop from the 1916 bloom, the 1917 bloom was an equally heavy one, which is being carried to maturity. The fruits can be picked in February, but they are probably not really at their best until the first of March. The season is therefore a month or more later than the average. If allowed to remain on the tree, many of the fruits will hang on until April or perhaps even later.

"The fruit is handsome, and its quality does not belie its looks. It is as large as a good grapefruit (20 to 24 ounces), with a slightly rough skin of yellowish green color, somewhat thicker than the average, so that the fruit is bruised with difficulty. The flesh is of deep yellow color, firm and rather dry in texture, entirely free from discoloration of any sort, and of the richest possible flavor. No better avocado, in point of flavor, has been found in all Guatemala. The seed, in large specimens of the variety, is comparatively small, while in smaller specimens it appears to be a trifle large; the seed appears to develop to more or less the same size in every case, independent of

43932 to 43935—Continued.

the size of the fruit. Under good cultural conditions in North America the fruit should be of large size, and if the seed remains small, as it does in the large specimens produced by the parent tree, this will almost surely be one of the choicest avocados of the set. It is scarcely necessary to add that the seed is tight in the cavity, for this is the case with all of the avocados included in the set.

"The variety may be described formally as follows: Form spherical to oblate; size large to very large, weight 17 to 24 ounces, length $3\frac{7}{8}$ to $4\frac{1}{2}$ inches, greatest breadth 4 to $4\frac{1}{2}$ inches; base rounded, the stem, which is about 5 inches long and moderately stout, inserted somewhat obliquely without depression; apex slightly flattened; surface uniformly pebbled, somewhat coarsely so, deep green to yellow green in color, with numerous large pale yellow green dots; skin moderately thick for this race, varying from one-sixteenth to one-eighth of an inch, hard and woody; flesh rich cream yellow to yellow in color, changing to pale green near the skin, free from fiber or discoloration, not watery, but very oily, smooth, and of rich, very pleasant flavor; seed oblate, 2 to 3 ounces in weight, tight in the cavity, with both seed coats adhering closely to the cotyledons, which are slightly rough for this race."
(*Popenoe*.)

43936 to 43944.

From Bhutan, Asia. Collected by Mr. R. E. Cooper in the Himalaya Mountains and presented by Mr. A. K. Bulley, of Bees Ltd., Liverpool, England. Received December 13, 1916. Quoted notes by Mr. Cooper.

43936. *CARAGANA* sp. Fabaceæ.

"No. 5533. Shrub of rounded form on sand; flowers not seen, but fruiting on exposed hillsides at 11,000 feet altitude, Lahoul."

43937. *THERMOPSIS* sp. Fabaceæ.

"No. 5601. Tufted plant on alpine pasture with low herbs at 13,000 feet. Flowers not seen, but similar plant in Bhutan has Vandyke brown flowers. Plant 1 foot in diameter."

43938. *COTONEASTER* sp. Malaceæ.

"No. 5353. Stunted bush on exposed, sandy slopes in Lahoul at 10,000 feet altitude."

43939. *GAULTHERIA* sp. Ericaceæ.

"No. 5627 and 5599. Growing on peat nodules and among low scattered herbs on large rock faces at 13,000 feet altitude. Fruits blue."

43940. *LONICERA* sp. Caprifoliaceæ.

Honeysuckle.

"No. 5625. Bush common on stony slopes near birch forests at 13,000 feet altitude; fruits red; flowers not seen. Plants dwarf, 10 inches, but spreading."

43941. *LONICERA* sp. Caprifoliaceæ.

Honeysuckle.

"No. 5654. Six-inch bush with red fruit in pairs in sheltered bare hollows in *Quercus* forest at 11,000 feet."

43942. *ROSA* sp. Rosaceæ.

Rose.

"No. 5391. Splendid bush, growing on dry walls at 10,000 feet altitude in Lahoul. Bush 10 feet through; sprays 6 to 8 feet long, full of flowers and showy red fruits in autumn."

43936 to 43944—Continued.

43943. SPIRAEA sp. Rosaceæ.

"No. 5633. Herb in alpine meadow in hollow with taller herbs. One foot high, only found in fruit, but remarkable for meal below leaves. Growing at 12,000 feet altitude."

43944. VIBURNUM sp. Caprifoliaceæ.

"No. 5640. Bush 2 to 4 feet, found below scattered and stunted oaks at 12,000 feet altitude. Fruit black, in pairs; flowers not seen."

43945 and 43946.

From Liverpool, England. Collected in the mountains of California and presented by Mr. A. K. Bulley, of Bees Ltd. Received December 13, 1916. Quoted notes by the collector.

43945. AMORPHA CALIFORNICA Nutt. Fabaceæ.

"No. 26. A leguminous shrub with narrow racemes of blue flowers. Grows at 5,000 to 6,000 feet altitude in mesophytic to xerophytic conditions. The pinnate leaves and the architecture of the shrub are ornamental."

43946. CALYCANTHUS OCCIDENTALIS Hook. and Arn. Calycanthaceæ.

"No. 3. Spice bush. A handsome shrub, 5 to 10 feet tall, with maroon flowers. Foliage fragrant. Growing along the banks of streams."

43947. KOELREUTERIA FORMOSANA Hayata. Sapindaceæ.

From Formosa, Japan. Presented by the Experimental Station of Forestry. Received December 27, 1916.

A tree, native of Formosa, Japan, up to 60 feet high, with oval-oblong leaflets with nearly entire margins, up to 4 inches in length. The yellow flowers are in large terminal panicles, and the fruit is a bladderlike, inflated, 3-lobed capsule about $1\frac{3}{8}$ inches long, containing black roundish seeds.

43948 to 43950.

From Paramaribo, Dutch Guiana. Seeds collected by Dr. J. A. Samuels. Received November 1, 1916.

43948. ALPINIA EXALTATA (L. f.) Roem. and Schult. Zinziberaceæ.
(*Renealmia exaltata* L. f.)

A plant belonging to the ginger family widely spread in tropical America. The fleshy oval fruit is finally black and yields a dye of some importance. (Adapted from a note of W. E. Safford, May 8, 1916.)

See S. P. I. No. 42799 for further information.

43949. ANACARDIUM OCCIDENTALE L. Anacardiaceæ. **Cashew.**

A small tree, about 20 feet high, found in the West Indies and South America, with rounded, oval leaves and rosy-tinted fragrant flowers in terminal clusters. The fruit is kidney shaped, about the size of a very large bean, and is borne on a fleshy receptacle 3 inches long and more, which contains a sweetish-sour edible pulp. The nuts are eaten like chestnuts, either raw or roasted, and contain a milky juice which is extremely acrid and corrosive. The tree yields a gum which is the basis of a varnish. (Adapted from Hogg, *Vegetable Kingdom*, p. 245, and from Bailey, *Standard Cyclopedia of Horticulture*, vol. 1, p. 279.)

43948 to 43950—Continued.**43950. ASTROGARYUM sp. Phoenicaceæ.****Palm.**

"Astrocaryums are elegant palms of medium height, very suitable for moderate-sized conservatories. In a young state the plants require the temperature of the stove, and after attaining the height of a few feet they may be best grown in a warmhouse and given plenty of water; also a humid atmosphere. Specimens 8 to 10 feet high fruit freely." (*Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 425.*)

43951. GARCINIA MANGOSTANA L. Clusiaceæ.**Mangosteen.**

From Dominica, British West Indies. Presented by Mr. Joseph Jones, curator, Botanic Gardens. Received December 18, 1916.

See S. P. I. Nos. 43446 and 43481 for previous introductions and descriptions.

43952. CARYA CATHAYENSIS Sarg. Juglandaceæ.**Hickory.**

From Hangchow, China. Presented by Dr. D. Duncan Main. Received December 18, 1916.

The only hickory so far found in China, a tall tree, 40 to 65 feet high, with grayish bark and leaves composed of five to seven lance-shaped or oval leaflets with upper surfaces soft green and the lower rusty brown. The nuts, which are thick shelled and elliptic in shape, are collected and sold as a sweetmeat; a fine clear yellow oil is extracted from them and used in fancy pastry. The wood is tough and strong and is used for tool handles. The tree thrives best at the foot of the mountains in narrow, moist valleys; it becomes crippled when exposed to much wind and can not stand much frost. (Adapted from *Sargent, Plantae Wilsonianae, vol. 3, pp. 187, 188.*)

43953. TETRAZYGIA BICOLOR (Mill.) Cogn. Melastomaceæ.*(Miconia bicolor Triana.)*

From Littleriver, Fla. Presented by Mr. Charles A. Mosier. Received December 13, 1916.

A West Indian shrub from 7 to 10 feet high, with narrowly oblong, sharp-pointed leaves, with the upper surfaces bright green and the lower golden yellow. The white flowers occur in many-flowered panicles up to 8 inches in length. (Adapted from *DeCandolle, Monographia Phanerogamarum, vol. 7, pp. 724, 725.*)

43954. LATHYRUS WATSONI White. Fabaceæ.**Vetchling.**

From Chico, Calif. Collected by Mr. Heller and transmitted to this office by Mr. R. L. Beagles, superintendent, Plant Introduction Field Station. Received December 18, 1916.

A perennial Californian herb with stout erect stems, 1½ to 2½ feet high, zigzag branches, light-green leaves, racemes of white flowers veined with purple, and pods about 2 inches long. (Adapted from *Jepson, Flora of Western Middle California, pp. 298, 299.*)

43955. QUERCUS SUBER L. Fagaceæ.**Cork oak.**

From Gibraltar, Spain. Secured through Mr. Richard L. Sprague, American consul. Received December 21, 1916.

"Spanish acorns gathered in the Almoraima corkwoods, district of Castellar, Spain." (*Sprague.*)

43956. FERONIA LIMONIA (L.) Swingle. Rutaceæ. Wood-apple.
(*F. elephantum* Correa.)

From Peradeniya, Ceylon. Seeds presented by Mr. T. H. Parsons, curator, Royal Botanic Gardens. Received December 18, 1916.

A spiny, deciduous tree, native of India and Indo-China, with compound leaves and nearly globular fruits filled with pinkish, edible pulp, which is used for making jelly. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 3, p. 1219.)

See also S. P. I. No. 42268 for further information.

43957. EUCALYPTUS MARGINATA J. E. Smith. Myrtaceæ.

From Sydney, New South Wales, Australia. Seeds presented by Dr. J. H. Maiden, director, Botanic Gardens. Received December 21, 1916.

An Australian tree, becoming tall under favorable circumstances, with lance-shaped leaves 3 to 6 inches long, and thick, hard, smooth, nearly globular fruits. A valuable hardwood tree in Australia, but not yet a success in America. The timber is easily worked, takes a fine polish, is not attacked by teredo, is almost incombustible, and is used in England for street paving and in Australia for piles, telegraph poles, shingles, etc. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 1159.)

43958. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Santiago de las Vegas, Cuba. Cuttings presented by Mr. J. T. Crawley, director, Agricultural Experiment Station. Received December 20, 1916.

"*Cristalina*. Noel Deerr in his 'Cane Sugar,' p. 26, says that the *Cristalina* is a Batavian cane and is the lighter of the two purple Batavia canes. It is known in Hawaii as *Rose Bamboo*, in the British West Indies at *White Transparent*, in Cuba as *Cristalina*, and in Louisiana as *Home Purple*. It is of no distinctive color, sometimes being a pale or ash color and at other times wine colored. Its color depends upon its age and environments; the younger the cane the more color it contains, and the younger parts of the cane are more colored than the older parts. It is a comparatively thin cane with long joints and has a longitudinal channel running from the eye to the next joint above. It is prone to fall down from the effects of high winds, is comparatively soft, and when mature furnishes a juice of high sucrose and purity. It is a comparatively hardy cane and will give remunerative crops on soil and under conditions where many other canes would fail. While not immune to the attacks of insects and diseases, it is among the canes which most successfully resist them." (*Crawley*.)

43959 to 43963.

From Canton, China. Obtained by Mr. E. D. Merrill, botanist, Manila Bureau of Science, Manila, Philippine Islands. Received December 26, 1916.

43959 and 43960. CANARIUM spp. Balsameaceæ.

The following observations relate exclusively to the fruit vended everywhere in the south of Kwangtung Province, of which there are two kinds: The *U-lam*, or "black olive," and the *Pak-lam*, or "white olive," produced, respectively, by *Canarium pimela* and *C. album*.

43959 to 43963—Continued.

Both white and black olives are a good deal grown around Wampoa. Since I have seen none in the immediate neighborhood of Canton nor in Hongkong and their cultivation is therefore apparently local, I can gain no intelligence of their occurrence in a wild state. They are trees 20 to 30 feet high, with a whitish trunk, and a close, round crown of foliage, which in hot sunny days exhale a pleasant balsamic odor, in which respect, as well as in general aspect, they resemble our common walnut. The two species, though perfectly distinct, are singularly alike.

I should remark that, when dried, the leaves of both species have the veinlets prominent, but the network is much closer and finer in those of the "white olive." The "white olive" is either eaten fresh, in which state its strongly resinous flavor renders it disagreeable to the European palate, or is placed when quite ripe in tubs filled with salt, stirred about continually, and after the lapse of a day taken out and dried. In this state it is hawked about in great abundance. It tastes much as the European olive might be expected to do if removed from the brine in which it is kept and allowed to dry, with an appreciable soupçon of turpentine superadded. I have been told it is regarded as a preventive of seasickness. The "black olive" is never eaten raw, but only after having been steeped for a few moments in boiling water. Thus prepared (and packed in jars, with the addition of a little salt, when desired to be preserved) it is of a fine purplish red color, like well-made freshly pickled mango. This fruit is held in much higher esteem than the other, and it is usual to keep a strict watch over it as it ripens, to prevent depredation. I have seen a man who was found luxuriating in the umbrageous coma of a tree to which he could lay no claim, with a basket full of fruit in his possession, tied "spread eagle" fashion to the trunk for nearly a day, the monotony of his durance being varied by periodical flagellations. (Adapted from *Hance*, in *Journal of Botany, British and Foreign*, vol. 9, pp. 38, 39.)

43959. CANARIUM ALBUM (Lour.) DC.

"Canarium fruits are commonly sold in Canton. This species is less expensive than the large one, *C. pimela*. The pericarp is eaten. They are pickled by the Chinese; I have seen them among imported Chinese foodstuffs in Manila." (*Merrill*.)

43960. CANARIUM PIMELA Koen.

"This species has a fleshy pericarp which is eaten. The seeds are also said to be edible. They are pickled by the Chinese; I have seen them among imported Chinese foodstuffs in Manila." (*Merrill*.)

43961. CITRUS AURANTIFOLIA (Christm.) Swingle. Rutaceæ. Lime.

A small tree, with irregular branches, found in all tropical countries, often in a semiwild condition. It has very sharp, short, stiff spines, small, rather pale green leaves, small white flowers, and an oval or round greenish yellow fruit from $1\frac{1}{4}$ to $2\frac{1}{2}$ inches in diameter, with thin skin and very acid pulp. Large quantities of limes are shipped to the United States from the West Indies for making limeade, and the lime juice is shipped bottled from Montserrat and Dominica in the West Indies. The juice is said to prevent scurvy, and hence is often carried on ships making long voyages. The trees are very sensitive to frost, and they are usually cultivated from seeds. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 782.)

43959 to 43863—Continued.**43962.** CITRUS AURANTIUM L. Rutaceæ.**Sour orange.**

A small tree, native of southeastern Asia, growing 20 to 30 feet high, with sweet-scented flowers and orange-colored or reddish fruit with an acid pulp. (Adapted from the *Philippine Agricultural Review*, first quarter, 1915, p. 10.)

See also S. P. I. No. 41713 for further description.

43963. CITRUS SINENSIS (L.) Osbeck. Rutaceæ.**Sweet orange.**

A medium-sized tree, widely cultivated in all of the tropical and subtropical regions of the world. It has a rounded top and regular branches, rather small white flowers, and oval or nearly globular fruit, with solid pith, sweet pulp, and membranes which are bitter. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 783.)

43964 and 43965.

From Manila, Philippine Islands. Seeds presented by Mr. Adn. Hernandez, Director of Agriculture. Received December 29, 1916.

43964. CECROPIA PALMATA Willd. Moraceæ.

Yaruma. A West Indian tree, up to 50 feet in height. At the top of the single, long, thin, weak trunk are a few horizontal or deflected awkward branches bearing large palmate leaves divided like thumbs, with white, hairy lower surfaces. The branches and trunk are hollow, with partitions at the nodes, and ants often make their homes in them. The juice is milky, the flowers are very small, and the fruits are small 1-seeded nuts. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 697.)

43965. GENIPA AMERICANA L. Rubiaceæ.**Genipap.**

A large stately tree, native of the American Tropics, growing 60 feet in height, with dark-green leaves a foot or more long. The edible fruits are about the size of an orange. (Adapted from the *notes of Messrs. Dorsett and Popenoe*, April 13, 1914.)

See also S. P. I. No. 37833 for further description.

43966 and 43967. FURCRAEA spp. Amaryllidaceæ.

From Rio Hacha, Colombia. Bulbils presented by Mr. M. T. Dawe, Ministerio de Agricultura y Comercio, at the request of Mr. L. H. Dewey, of the Bureau of Plant Industry. Received December 23, 1916.

The species of this genus are succulent desert plants from tropical America. Some of them have spiny leaves like the century plant; others have leaves with very minute serrations on the margins, while many have entirely smooth margins. The flowers are whitish, and as a rule these plants bear fruit only once, after which they die. However, while flowering they produce an immense number of bulbils, which may be used for propagation. The method of propagating is similar to that for century plants, except that *Furcraeas* requires more heat and water. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 3, p. 1305.)

43966. "No. 1."**43967.** "No. 2."

43968. FERONIELLA OBLATA Swingle. Rutaceæ. Krassan.

From Saigon, Cochin China. Presented by Mr. P. Morange, director, Agricultural and Commercial Services. Received December 30, 1916.

For a description, see S. P. I. No. 43566.

43969 to 43979. CUCURBITA PEPO L. Cucurbitaceæ.

From San Juan Bautista, Tabasco, Mexico. Seeds presented by Mr. G. Itié, director, Agricultural Experiment Station. Received December 16, 1916.

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43975. No. 6.

43970. No. 2.

43976. No. 6 bis.

43971. No. 2 bis.

43977. No. 7.

43972. No. 3.

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BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

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DURING THE PERIOD FROM JANUARY 1
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(No. 50; Nos. 43980 to 44445.)



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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT IN- TRODUCTION DURING THE PERIOD FROM JANU- ARY 1 TO MARCH 31, 1917 (NO. 50; NOS. 43980 TO 44445).

INTRODUCTORY STATEMENT.

When the war broke out it was expected by many that interest in new plants would suffer a serious setback. That the contrary is true is the conviction forced upon the writer from watching the correspondence which passes over his desk. The hunt for substitutes has served to counterbalance in a measure the effect of the curtailment of the funds of amateur and official experimenters, and the spectacle of our dependence upon foreign raw plant materials has been in the nature of a revelation to millions of people. That the world has scattered over it enthusiastic pioneers who see possibilities in plants which are now obscure, this inventory is evidence, for it describes plants sent in by such pioneers during the third year of the war from 41 different foreign countries or separate islands. While the total number for the three months covered is not so great as that during the similar period in 1913, the fact must be taken into account that only two explorers of the office were in the field, viz, Frank N. Meyer, in central China, and Wilson Popenoe, in Guatemala.

Hosts of the plants have been sent in by correspondents, many of them foreigners, who recognize, as we do, that the area of plant culture can not be confined by national boundaries, but is limited only by the natural barriers of soil, climate, and human intelligence. In the world to-day there is no large plant monopoly which depends for its maintenance upon the prohibition of the export of the seeds of the plant on which it is founded. Where the plants can grow to perfection and the requisite human intelligence is present and other economic factors are favorable, there plant industries will be built up and maintained so long as the factors of quality and the cost of production and transportation remain favorable and fashion does not change.

Many of the plants herein recorded are in the nature of gifts to America by foreign countries, and it is with especial pleasure that we acknowledge officially the debt of gratitude, realizing fully that,

many years hence, when the plants shall have developed and become widely grown, this debt may indeed be a very large one.

The more promising of the introductions appear to be the following:

Three selected strains of red clover (*Trifolium pratense*, Nos. 44105 to 44107), presented by the Danish Royal Agricultural Society, two being quite new, the third already in general use in Denmark.

Psychotria bacteriophila (No. 44119), a shrub from the Comoro Islands, Madagascar, producing leaves which harbor nodules of bacteria that gather nitrogen from the air, quite as do the root nodules of the Leguminosæ.

An ash (*Fraxinus potamophila*, Nos. 44132 to 44134), from Chinese Turkestan, sent through the American ambassador by the British consul general at Kashgar. This ash, first introduced by Frank N. Meyer, has proved perfectly hardy at Fallon, Nev., and promises to be a valuable tree on the poor soil of that region.

The famous Pai li and other cultivated large-fruited varieties of the blight-resistant pear (*Pyrus ussuriensis*, Nos. 44145, 44147, 44148, 44150, and 44151) from China, obtained through Mr. Meyer.

A tall-growing, new species of spruce (*Picea meyeri*, No. 44149), found by Mr. Meyer in Shinglungshan, Chihli Province, China, and named by Rehder and Wilson after our explorer.

A collection of cultivated varieties of Chinese pears (Nos. 44163 to 44174 and 44176), containing some of *Pyrus ussuriensis* and others of *P. lindleyi*. These may prove of considerable value in the studies of blight resistance which are now being made by Reimer and others.

An amaranth (*Amaranthus paniculatus*, No. 44178) from Kashmir, where its farinaceous seeds form the staple food of the hill tribes in many parts of India; the plant is known as rájgira.

A species of Calamus (No. 44181), called the litoco, introduced by Mr. Wester, from Kiangnan, northern Luzon. This plant bears small, scaly fruits, of subacid, refreshing flavor, resembling the lanzon (Lansium), and with excellent keeping qualities.

Garcinia multiflora (No. 44239), from Kiayingchow, near Swatow, China, a shrub which bears a delicious but small fruit resembling the true mangosteen in flavor. The fact that it has withstood temperatures of 27° F. without injury may indicate that it can be grown outside the Tropics, and its relation to the true mangosteen may make it valuable for breeding purposes.

Seeds of *Bambos tulda* (No. 44240), from Dehra Dun, India. This species has proved so easy of cultivation in Panama and Porto Rico and its timber is so valuable for fishing-rod manufacture that the securing of a considerable quantity of seed is worthy of mention.

Cudrania tricuspidata (No. 44241), from American-grown trees at Augusta, Ga., where the tree seems to be quite at home and bears

heavily. Recent information indicates that the silk from silkworms fed upon the leaves of this plant is different from ordinary silk and that lute strings made from it give a clearer tone than those made of silk spun by silkworms fed on the ordinary mulberry leaves. This fact doubtless will be of interest to all those studying the influence of foods upon the secretions of animal bodies. Silk being a typical protein, like the white of eggs or the casein of milk, facts discovered regarding changes in its character might have a bearing upon the studies of the changes in the character of other proteins.

A wild bush tomato (*Lycopersicon esculentum*, No. 44245), with wrinkled fruits, from Panama, where it appears, according to Mr. O. W. Barrett, to be resistant to wilt (*Bacillus solanacearum*).

A collection of Chinese peach varieties (*Amygdalus* spp., Nos. 44253 to 44266) from Kiangsu Province, China, secured through the Rev. Lacy L. Little, of Kiangyin, among them one variety from the famous Lushang Gardens.

In Nairobi, British East Africa, the inner bark of *Strychnos spinosa* (No. 44019) appears to be used successfully as an antidote for snake bites and deserves to be investigated. The fact that this plant grows so successfully in southern Florida, where rattlesnakes and moccasins are frequent, may make the wide distribution which has been made of it a thing well worth while. In any event, it deserves study from this new point of view.

The pepino (*Solanum muricatum*, Nos. 44021 and 44022) appears to be represented in Ecuador by two distinct varieties, one white and the other purple. As this is a fruit of excellent quality, practically seedless, and adapted for salads, it seems a pity that a more thorough test of it has not been made in America. Enough ought to be produced to place it on our markets for several years, for a fruit which has become so popular in the Canary Islands surely has a chance in America.

A new annual legume (*Aeschynomene* sp., No. 44040), for soil fertilization, from Costa Rica, which, though not certainly a forage crop, is reported to have unusual quantities of nitrogen-collecting nodules on its roots.

Sixteen distinct species or hybrids of the genus *Pyrus* (Nos. 44041 to 44056), from the Arnold Arboretum. These deserve a thorough trial as stocks for the cultivated pear. This is particularly interesting at this time, when the question of shutting out European-grown nursery stock and the creation of a more uniform root system for our orchard trees appear as problems of great importance.

Few shrubs strike the American visitor to England as adding more to the charm of the grounds of small cottages than do the cotoneasters, which are extensively used in dooryards. Many of those used in England are tender here, but certain of the Chinese

species (see Nos. 43989 to 43995 and 44077 to 44084) are quite hardy with us, and these deserve the same place in our gardening that the more tender species occupy in England.

It is not often that a plant is introduced from a region so little known as the Falkland Islands, and the climate of these islands of the southern hemisphere may be difficult to approximate in America, but the tussock grass (*Poa flabellata*, No. 44000), which grows in peaty soils near the sea, yields a good forage, and has edible nutty flavored shoots, should be tested carefully.

The tree-tomato (*Cyphomandra betacea*, No. 44064) appears to have become a cultivated fruit plant in British East Africa, and a purple-fruited strain of it found there indicates that something may be done in the selection of this promising species of Solanaceæ.

The species of Rollinia (No. 44094), as yet undescribed, collected by Mr. M. T. Dawe, in the lowlands of northern Colombia, is said to bear orange-colored edible fruits. This adds another annonaceous fruit to the collection being assembled for purposes of hybridization and selection at Miami, Fla.

The pacaya palm (*Chamaedorea* sp., No. 44059), cultivated in nearly every garden in Coban, Guatemala, and producing edible inflorescences like ears of corn, deserves to be studied, and if it can be grown in southern Florida or California it should be planted in sufficient quantities to test it thoroughly as a salad-producing plant.

A native grape (*Vitis tiliæfolia*, No. 44060), sold in the city markets of Guatemala, is used extensively for jelly making. It grows luxuriantly in southern Florida and may prove a stock for North American or European grapes.

The soft lumbang tree (*Aleurites trisperma*, No. 44061), producing an oil similar to that of the Chinese tung-oil tree, deserves study on a plantation scale to determine whether it can be grown economically in our tropical territory and can be depended upon to increase the supply of this valuable drying oil, which has trebled in price since the war.

A remarkable collection of pear species and varieties (Nos. 44274 to 44280) made by Mr. Meyer in Chihli Province, China, and including a cultivated variety of *Pyrus ussuriensis* with edible fruits and another pear, possibly a new species, is used for stock by the Chinese horticulturists.

Mangifera caesia (No. 44290), a species related to the mango, may be worthy of trial as a stock, or possibly crosses of it might be useful.

Four varieties of seedling avocados (*Persea americana*, Nos. 44439, 44440, 44444, and 44445) from Guatemala, collected by Wilson Popenoe, include one producing fruits of very unusual size (45

ounces) and good quality, which is at the same time a productive sort.

The manuscript of this inventory has been prepared by Mrs. Ethel M. Kelley, the botanical determinations of seeds introduced have been made and the botanical nomenclature revised by Mr. H. C. Skeels, and the descriptive and botanical notes arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory, as of all the publications of this office.

DAVID FAIRCHILD,

Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,

Washington, D. C., October 14, 1919.

INVENTORY.¹

43980. BERBERIS TRIFOLIOLATA Moric. Berberidaceæ. Barberry.

From College Station, Tex. Presented by Mr. B. Youngblood, director, Agricultural Experiment Station. Received January 8, 1917.

An evergreen shrub from western Texas, with leaves composed of three to five spiny leaflets, which produces red, aromatic, acid berries, about the size of peas. These berries ripen in May. They are often called "currants," and are used for tarts, jellies, etc. (Adapted from Coulter, *Contributions from the United States National Herbarium*, vol. 2, p. 10.)

"According to Mr. Youngblood's verbal statement, this barberry jelly is being made each year in increasing quantities and is highly prized by all who have tested it. There would appear to be a field for the plant breeder in the development of heavy-fruited barberries of good flavor with few or no seeds, and it seems remarkable that no one has undertaken the task." (*Fairchild*.)

43981. DAHLIA sp. Asteraceæ. Tree dahlia.

From Tactic, Alta Vera Paz, Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received January 10, 1917.

"No. 78. Double white variety. The pink tree dahlia is common throughout a large part of Guatemala. I have seen it from Antigua to Coban, often in great abundance, its huge single pink flowers, 4 inches in diameter, making it a very striking thing. The pink form, which apparently is the typical one, is the only form which I have seen in the southern part of Guatemala, but in the vicinity of Tactic there are three other forms. None of these is so common as the pink form, although all are seen occasionally in gardens. The forms in question are a single white, identical with the typical single pink except in its color, which is pure white; a double pink, of the same lilac-pink shade as the typical form, but with double flowers 3 inches in diameter; and a double white form, of the same character as the double pink, but pure white. The tree dahlia is called *shikar* in the Pokomchi dialect, the language of the Indians at Tactic. It is very commonly planted around gardens and dooryards to form a hedge, large cuttings 3 to 4 feet long and of stems 1 to 2 inches in diameter being inserted in the ground and apparently rooting very readily. The plants grow to 15 feet in height, and when in full bloom, as they are at this season of the

¹ Each introduction consists of seeds unless otherwise specified.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received by the Office of Foreign Seed and Plant Introduction; and further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names in American literature becomes necessary, the designations appearing will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

year, are a glorious sight. Tactic is made beautiful by this common plant, and it would seem well worth while to test it for hedges in California, where the pink form has already been introduced and is offered in the trade. The variety sent in under this number is the *double white*, which seems to be one of the most beautiful of all. The flowers of this form are extensively used by the Indians of Tactic for decorating the images of saints which they have in their houses and in the churches." (*Poppen*.)

This is possibly a cultivated form of *Dahlia maroni* Safford.

43982. Gossypium sp. Malvaceæ. Cotton.

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received January 10, 1917.

"Seeds of the native red cotton of Paraguay. This is said to be indigenous." (*Mead*.)

43983 and 43984. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.
(*Cechium edule* Swartz.)

From Rio de Janeiro, Brazil. Presented by Dr. Alberto Löfgren, Botanic Garden. Received January 2, 1917.

43983. "Fruit very small and quite corrugated." (*B. T. Galloway*.)

43984. "Fruit medium sized, considerably corrugated, and spineless; skin thick." (*B. T. Galloway*.)

43985. CASTILLEJA INDIVISA Engelm. Scrophulariaceæ. Painted cup.

Grown at the Plant Introduction Field Station, Chico, Calif., from seed collected at Lyford, Tex., by Dr. David Griffiths, of the Department of Agriculture, May 2, 1915. Plants numbered for convenience in distribution on January 17, 1917.

"One of the most showy of the winter annuals of southern Texas. The seedlings come up very abundantly upon the sandy coastal plain in autumn, developing slowly during the winter but rapidly in early spring, and dominating the color of acres of the landscape in late March and early April. Here its seeds are matured in late April and early May. There are few native plants more showy than this one. This whole group of *painted cups*, however, is considered somewhat difficult to grow and is consequently little handled in the trade in this country, although commonly grown in England. Our efforts have met with both success and failure in their handling. Recent trials indicate that the habits of the plant fit it to stand winter handling and that it can be grown successfully as a winter annual in regions having mild winters with sufficient moisture for seed germination in autumn. It requires a comparatively low temperature for its development. Experience at Chico, Calif., shows that the sudden transition from winter to summer, such as we have, dwarfs the plants before maturity, so that they produce but few of the colored bracts which are so attractive in all of the *painted cups* or *Indian paintbrushes*." (*Griffiths*.)

43986. CARICA PAPAYA L. Papayaceæ. Papaya.

From St. Leo, Fla. Presented by Father Jerome, St. Leo College. Received January 2, 1917.

"Seed saved from a tree that has endured a temperature of 27° F. and has borne 100 fruits in 12 months from seed. Father Jerome received from Hawaii the seed from which this tree was grown." (*Pcter Bisset*.)

43987. PYRUS CALLERYANA Decaisne. Malaceæ. Pear.

From Jamaica Plain, Mass. Scions presented by the Arnold Arboretum.
Received January 2, 1917.

This wild Chinese pear is not uncommon in western Hupeh at altitudes of 1,000 to 1,500 meters. It is easily recognizable by its comparatively small crenate leaves and small flowers. This pear maintains a vigorous and healthy appearance under the most trying conditions, and might prove to be a very desirable blight-resistant stock. The woolly aphid, which attacks other species of pears, has not been known to touch this species. (Adapted from *Compere, Monthly Bulletin Calif. State Comm. Hort.*, vol. 4, pp. 313-314, and from *Rehder, Chinese Species of Pyrus, Proc. Am. Acad.*, vol. 50, pp. 237-238.)

43988. PRUNUS BOKHARIENSIS Royle. Amygdalaceæ. Plum.

From Seharunpur, India. Cuttings presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens. Received January 4, 1917.

"*Alucha black.*" A plum from Chinese Turkestan, with medium-sized cling-stone fruits of fine flavor, which ripen late in July. They are excellent for preserves and jellies. (Adapted from *note of Frank N. Meyer, Jan. 10, 1911.*)

See also S. P. I. No. 40223 for further data.

43989 to 43996.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received January 5, 1917.

43989. COTONEASTER AMBIGUA Rehd. and Wils. Malaceæ.

A shrub from western China, up to 7 feet high, with deciduous, oval-oblong, sharp-pointed leaves up to 2 inches long; five to ten pinkish flowers borne in corymbs; and black globose fruit about one-third of an inch long containing two or three, rarely four or five, stones. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, pp. 160-161.*)

43990. COTONEASTER DIELSIANA E. Pritz. Malaceæ.

A shrub from western China, up to 6 feet high, with slender spreading and arching branches and deciduous, firm oval leaves about three-quarters of an inch long with yellowish gray lower surfaces. The pinkish flowers are few and short stemmed, and the red fruit, a quarter of an inch in diameter, contains three or four stones. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 866.*)

43991. COTONEASTER DIVARICATA Rehd. and Wils. Malaceæ.

A deciduous upright shrub from central and western China, with shining oval leaves, one-third to three-quarters of an inch long. The pink flowers are usually in threes, and the fruit, which contains only two stones, is one-third of an inch long. It is a very handsome shrub when studded with its bright-red fruits and is hardy at the Arnold Arboretum. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 865.*)

43992. COTONEASTER HORIZONTALIS PERPUSILLA C. Schneid. Malaceæ.

A low Chinese shrub of prostrate habit, with almost horizontal branches in two dense series and roundish oval leaves less than one-third of an inch long. The flowers are erect, pink, and either solitary or in pairs:

43989 to 43996—Continued.

and the bright-red oval fruit, a quarter of an inch in diameter, usually contains three stones. One of the most effective fruiting shrubs for rockeries. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 865.*)

43993. COTONEASTER NITENS Rehd. and Wils. Malaceæ.

A shrub from western China, up to 4½ feet high, with deciduous, oval, obtuse, shining green leaves up to half an inch or more long; probably pink flowers, and nearly black fruits, either solitary or in pairs, up to one-sixteenth of an inch long, and containing two stones. In its native country it grows at elevations of 7,500 to 10,000 feet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, pp. 156-157.*)

43994. COTONEASTER OBSCURA Rehd. and Wils. Malaceæ.

A shrub from western China, up to 10 feet in height, with elliptic-oval leaves, 1 to 2 inches long. The fruit is dull red, one-third of an inch long, and generally contains three stones. The flowers are white. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 867.*)

43995. COTONEASTER TENUIPES Rehd. and Wils. Malaceæ.

A gracefully branched deciduous shrub from western China, up to 7 feet tall, with oval or elliptic-oval sharp-pointed leaves about 1½ inches long. The flowers are white; the fruits are nearly black, usually solitary, and contain two stones. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 171.*)

43996. SORBUS POHUASHANENSIS (Hance) Hedl. Malaceæ.

An evergreen shrub from northern China, with reddish brown twigs, leaves composed of six to seven pairs of elliptic or lance-elliptic leaflets from 1½ to 2 inches long, and red fruits about one-third of an inch in diameter. This shrub is in cultivation at the Arnold Arboretum. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 1, p. 672.*)

43997 and 43998.

From Caracas, Venezuela. Collected by Dr. J. N. Rose, associate curator, United States National Museum. Received January 5, 1917.

43997. FRAGARIA VESCA L. Rosaceæ.**Strawberry.**

"Srawberries are found wild in the mountains, but Dr. Ernst declares that they are not native." (*Rose.*)

43998. PSIDIUM GUAJAVA L. Myrtaceæ.**Guava.**

"Seeds of a very large guava, the largest I have ever seen. It is 4 inches long and resembles somewhat a large Bartlett pear. It may be known to you, but is new to me. It is called at Caracas the 'Peruvian guava,' but I saw nothing like it in Peru in 1914. It has only recently been introduced into Caracas. I obtained the seeds from Mr. Frederick L. Pantin, acting manager of the Caracas & La Guaira Railroad." (*Rose.*)

43999. BAILEYA MULTIRADIATA Harv. and Gray. Asteraceæ.

From the Santa Rita Mountains, Ariz. Collected by Dr. David Griffiths.
Received January 6, 1917.

A very handsome plant, found in the southwestern United States and northern Mexico. It is biennial or perennial, densely woolly, with alternate compound leaves and long-stemmed heads of bright-yellow flowers. It is common on the mesas in the early spring, and sometimes continues flowering until late in the fall. (Adapted from *Wootton and Standley, Flora of New Mexico*, p. 718.)

44000. POA FLABELLATA (Lam.) Hook. f. Poaceæ. **Tussock grass.**

From Stanley, Falkland Islands. Procured from Mr. W. A. Harding, manager, Falkland Islands Co., through Mr. David J. D. Myers, American consul, Punta Arenas, Chile. Received January 8, 1917.

A coarse grass, native of the Falkland Islands, growing on peat soils near the sea. The plant forms dense masses of stems which frequently rise to a height of 4 to 6 feet, and the long, tapering leaves 5 to 8 feet long and an inch wide at the base hang gracefully over in curves. The plant is much relished by cattle; it is very nutritious and contains saccharin. The inner portion of the stem, a little way above the root, is soft and crisp, and flavored like a hazelnut; the inhabitants of the Falkland Islands are very fond of it. They boil the young shoots and eat them like asparagus. (Adapted from *Hogg, Vegetable Kingdom*, pp. 823-824.)

See S. P. I. No. 43564 for previous introduction.

44001 to 44005.

From Los Angeles, Calif. Presented by Mr. P. D. Barnhart. Received January 9, 1917.

44001. CARDIOSPERMUM HIRSUTUM Willd. Sapindaceæ.

Seeds of a creeping or ascending perennial vine, cultivated in southern California, with a densely hairy, grooved stem, deeply dentate leaves with hairy lower surface, small white flowers in axillary racemes, and pointed, hairy fruits, each containing a globular chocolate-brown seed. This plant is useful for covering arbors; it blooms continuously. It came originally from Africa. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 661.)

44002. DIPLACUS LONGIFLORUS Nutt. Scrophulariaceæ.

Plants of a low subshrubby perennial from California. The opposite, broadly lanceolate leaves are dark green above, and the large flowers, 1½ inches across, are a beautiful pale orange or buff. The showiness and the rare color of the flowers make this plant a most attractive ornamental.

44003. PENTSTEMON CORDIFOLIUS Benth. Scrophulariaceæ.

Beard-tongue.

Plants of a more or less shrubby climber, with long very leafy branches and short leafy clusters of rich scarlet flowers nearly 2 inches long. The brilliant flowers form a striking contrast to the dark-green foliage.

44001 to 44005—Continued.**44004. RIBES SPECIOSUM** Pursh. Grossulariaceæ.**Gooseberry.**

Plants of an evergreen California shrub, 3 to 5 feet high, with shining dark-green 3-lobed leaves and drooping clusters of bright-red flowers. In March and early April it forms one of the conspicuous charms of the foothills about Los Angeles.

44005. ZAUSCHNERIA CALIFORNICA Presl. Onagraceæ.**Balsamea.**

Cuttings of a low perennial herb, found at medium altitudes of the Sierra Nevada mountain range in California, with erect or decumbent stems about a foot high and oblong or narrow alternate leaves. The large scarlet fuchsialike flowers are up to 2 inches long, and the oblong seeds have tufts of hair at the apexes. Among the Spanish element in California this plant is used as a vulnerary. (Adapted from Jepson, *Flora of Western Middle California*, p. 327.)

44006. PYRUS CALLERYANA Decaisne. Malaceæ.**Pear.**

From Hongkong, China. Presented by Mr. W. J. Tutcher, superintendent, Botanical and Forestry Department. Received January 13, 1917.

See S. P. I. No. 43987 for previous introduction and description.

44007 to 44017. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Santiago de las Vegas, Cuba. Cuttings presented by Mr. J. T. Crawley, director, Agricultural Experiment Station. Received January 15, 1917.

44007. B-604.**44013. D-306.****44008. B-1753.****44014. Blanca.****44009. B-6308.****44015. Lucier.****44010. B-6450.****44016. Caledonia.****44011. B-6204.****44017. B-3412.****44012. D-74.****44018. AMYGDALUS PERSICA** L. Amygdalaceæ.**Peach.***(Prunus persica* Stokes.)

From Tientsin, China. Presented by Mr. Fred. D. Fisher, American consul general. Received January 15, 1917.

"Seeds of common peaches; early season, grown on the banks of the Hai Ho, Tientsin, China." (*Fisher.*)

44019. STRYCHNOS SPINOSA Lam. Loganiaceæ.**Kafir orange.**

From Nairobi, British East Africa. Presented by Mr. A. C. MacDonald, Director of Agriculture, through Mr. Ralph M. Odell, commercial agent, Bombay, India. Received January 16, 1917.

"A moderate-sized tree of the family Loganiaceæ, which produces fruit very similar to an orange. The shell is hard and contains numerous (upwards of 40) seeds of a flat and somewhat circular outline half an inch or more in diameter. When quite ripe the fruit is juicy, and it is eaten and much liked by the natives. The tree is fairly common at Mazeras and Samburu and is probably distributed in other districts in the surrounding country." (*H. Powell.*)



THE GUATEMALAN PEPINO, A SEEDLESS SALAD FRUIT (*Solanum muricatum*, S. P. I. No. 44021).

Though introduced into California from Guatemala 20 years ago, this relative of the tomato has not become popular, as it has in the Canary Islands. It is doubtful whether it has found its proper niche there, where it can produce as delicate-flavored fruits as it does in the terraced gardens of Grand Canary. Its seedlessness, juiciness, and cucumberlike flavor make it worth serious consideration as an addition to salads. (Photographed by David Fairchild, Grand Canary, near Las Palma, Canary Islands, April, 1903; P9790FS.)



BARGAINING FOR KAU BA IN SHANGHAI (*ZIZANIA LATIFOLIA*, S. P. I. No. 44069).

Scene in the Hongkew market. A Japanese girl is bargaining for "water-bamboo" shoots, "kau ba," as they are called locally. These shoots supply a tasteful vegetable when properly prepared. The young shoots of this relative of our own American wild rice are eaten in the late spring when they are swollen by the action of a fungus similar in its effect to corn smut. It is in no way related to the true bamboo. The usual name for this wild rice is ku, and the South China name for the shoots is chiao sun. (Photographed by Frank N. Meyer, June 11, 1915, at Shanghai, China; P12301FS.)

44020. PYRUS sp. Malaceæ.**Pear.**

From Ningpo, Chekiang, China. Cuttings presented by Mr. L. C. Hylbert.
Received January 15, 1917.

44021 and 44022. SOLANUM MURICATUM Ait. Solanaceæ.**Pepino.**

From Ecuador. Presented by Mr. Frederick W. Goding, American consul general, Guayaquil. Received January 17, 1917.

"After persistent search a place near Huigra was found where the plants grew at an altitude of 6000 feet. As a point of interest I will state that these two varieties are now growing in boxes at this office. One of them has produced flowers, but no fruit as yet." (*Goding.*)

44021. "Purple pepino."**44022. "White pepino."**

For an illustration of the Guatemalan pepino, see Plate I.

44023 to 44028. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Cienfuegos, Cuba. Cuttings presented by Mr. R. M. Grey, Harvard Experiment Station. Received January 18, 1917.

"Cuttings. High in sugar, averaging from 19 to 20 per cent sucrose in our hand-mill analyses." (*Grey.*)

44023. [No label.]**44026.** Harvard 6047.**44024.** Harvard 4068.**44027.** Harvard 6065.**44025.** Harvard 5082.**44028.** Harvard 6159.**44029 to 44035. SACCHARUM OFFICINARUM L. Poaceæ.****Sugar cane.**

From Cienfuegos, Cuba. Seeds presented by Mr. R. M. Grey, Harvard Experiment Station. Received January 18, 1917.

44029. Harvard 5150.**44033.** Harvard 1309.**44030.** Harvard 1421.**44034.** Harvard 5039.**44031.** Harvard 2048.**44035.** Harvard 1193.**44032.** Harvard 5005.**44036. CARICA PAPAYA L. Papayaceæ.****Papaya.**

From Pago Pago, American Samoa. Presented by Mr. J. M. Poyer, governor, American Samoa. Received January 22, 1917.

"A variety of papaya known here as 'Esi fafine.'" (*Poyer.*)

44037 to 44039.

From Changning, v'a Swatow, China. Presented by Rev. C. E. Bousfield, American Baptist Mission. Received January 23, 1917.

44037. CHAETOCHLOA ITALICA (L.) Scribn. Poaceæ. Common millet.
(*Setaria italica* Beauv.)

Millet is cultivated extensively as a food plant in Asia, though it is raised only for fodder in America.

44037 to 44039—Continued.

44038. *ELEUSINE CORACANA* (L.) Gaertn. Poaceæ. **African millet.**

A grass closely related to and much resembling goose-grass (*Eleusine indica*), often cultivated as an ornamental.

44039. *HOLECUS SORGHUM* L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

Apparently a nonsaccharine or forage variety.

44040. AESCHYNOMENE sp. Fabaceæ.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received January 17, 1917.

"*Yellow sensitiva*. A very dense-growing leguminous annual, whose roots are almost completely covered with nodules. People say that it is a good forage plant, but I have never seen cattle eat it. Our best plant for nitrification of the soil." (Wercklé.)

44041 to 44056. PYRUS spp. Malaceæ. **Pear.**

From Jamaica Plain, Mass. Cuttings presented by the Arnold Arboretum. Received January 25, 1917.

4041. *PYRUS AMYGDALIFORMIS* Vill.

A small tree, native of southern Europe, occasionally 20 feet or more high, or sometimes merely a large, rounded shrub. The leaves which are variable in shape and size, are from 1½ to 2½ inches in length; the white flowers, 1 inch wide, are produced in April in corymbs; and the round, yellowish brown fruits are about an inch in diameter. The chief merit of this tree is its picturesqueness in age. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 273.)

44042. *PYRUS BETULAEFOLIA* Bunge.

A slender, fast-growing, graceful tree from northern China, attaining a height of 20 to 30 feet, with the young shoots thickly covered with a persistent gray felt. The dark-green oval or roundish, dentate, long-pointed leaves are 2 to 3 inches long; the white flowers, three quarters of an inch wide, occur eight to ten in corymbs; and the grayish brown roundish fruits are about the size of a pea. The Chinese use this as a stock on which to graft fruiting pears. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 279.)

44043. *PYRUS BRETSCHNEIDERI* Rehder.

A medium-sized Chinese tree, with sharp-pointed serrate leaves 2 to 4 inches long, white flowers about three-quarters of an inch wide occurring seven to ten in racemes, and nearly globular yellow fruits up to 1½ inches long. It is possible that the native name *Pai-li* may include this species. (Adapted from *Rehder, Proceedings of the American Academy of Arts and Sciences*, vol. 50, p. 231.)

44044. *PYRUS CALLERYANA* Decaisne.

See S. P. I. No. 43987 for previous introduction and description.

44045. *PYRUS PHALOCARPA GLOBOSA* Rehder.

A medium-sized Chinese tree with ovate, round-based, deep-green leaves; unusually large, white flowers; and globular brown or russet slender-stalked fruits. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2780.)

44041 to 44056—Continued.**44046. PYRUS HETEROPHYLLA** Regel and Schmalh.

A small tree, ultimately 20 to 30 feet high, native of Eastern Turkestan, with exceedingly variable leaves of two extreme types, either oval and 2 to 3½ inches long, or cut back to the midrib into three to seven narrow lobes, which are three-quarters of an inch to 2 inches long. The white flowers, three-quarters to an inch wide, are produced in small clusters, and the fruit is like an ordinary small pear. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 284-285.)

44047. PYRUS KORSHINSKYI Litv.

A tree native of Bokhara, Turkestan, 20 feet or more in height, or sometimes a shrub, with coriaceous lance-shaped or ovate-oblong, coarsely crenate leaves about 3 inches long, and nearly globose stout-stalked fruits almost an inch in diameter, crowned by a persistent calyx. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2868.)

44048. × PYRUS MALIFOLIA Spach.

A hybrid of unknown parentage, originally grown in Paris in 1834, where it formed a tree more than 30 feet high with a rounded bushy head. The leaves are oval or roundish, about 3 inches wide, occurring in few-flowered corymbs. The deep-yellow fruit is turbinate and about 2 inches long and wide. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 286-287.)

44049. × PYRUS MICHAUXII Bosc.

A small tree, probably native of the Levant, and said to be a hybrid between *Pyrus amygdaliformis* and *P. nivalis*. It has entire oval or oval-oblong, shining leaves up to 3 inches long, white flowers in very short corymbs, and globular or turbinate greenish yellow fruits. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 288.)

44050. × PYRUS OBLONGIFOLIA Spach.

A small tree, occasionally 20 feet or more high, said to be a hybrid between *Pyrus amygdaliformis* and *P. nivalis*, and common in Provence, France. The leaves are oval or oblong, and the fruits, which are yellowish, tinged with red on the sunny side, are about 1½ inches in diameter. In Provence it is known as the *Gros Perrussier*. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 273, under *P. amygdaliformis oblongifolia*.)

44051. PYRUS USSURIENSIS OVOIDEA* Rehder.

A Chinese tree of pyramidal habit, 30 to 50 feet high, with oval-oblong sharply serrate leaves, 3 to 5 inches long; white flowers in five to seven flowered racemes; yellow, juicy, somewhat astringent, exactly egg-shaped fruits, up to 1¾ inches long. In autumn the foliage turns a bright scarlet, and the flowers appear a week ahead of the other species of pears. (Adapted from *Rehder, Proceedings of the American Academy of Arts and Sciences*, vol. 50, pp. 228-229, and from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2869.)

44052. PYRUS PASHIA Buch.-Ham.

A usually spiny tree from western China and the Himalayas, with leaves when young three lobed and doubly serrate, becoming glabrous with age. The flowers, an inch wide, are mostly in woolly corymbose

44041 to 44056—Continued.

clusters, and the brown fruits are globose and an inch in diameter. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 5, p. 2870.)

Received as *Pyrus variolosa*, which is generally referred to *P. pashia*.

44053. PYRUS SALICIFOLIA Pall.

Var. *pendula* Hort. A very elegant tree, native of southeastern Europe and Asia Minor, from 15 to 25 feet high, with pendulous branches, narrow lance-shaped shiny green leaves $1\frac{1}{2}$ to $3\frac{1}{2}$ inches long, pure-white flowers three-quarters of an inch wide in small dense corymbs, and pear-shaped fruits 1 to $1\frac{1}{4}$ inches long. The leaves and flowers of this very ornamental pear often open simultaneously, producing a charming effect. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 292-293.)

44054. PYRUS SEROTINA Rehder.

A tree native of central and western China, 20 to 30 feet high, with oval-oblong sharply serrate leaves 3 to 5 inches long, six to nine white flowers in each raceme, and nearly globular, brown fruits with slender stalks. This species or one of its forms has been recommended on the Pacific coast as a more or less blight-resistant stock for the European types. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 5, pp. 2868-2869.)

44055. PYRUS SERRULATA Rehder.

A tree native of western China, 22 to 25 feet high, with oval or oval-oblong serrulate leaves up to $4\frac{1}{2}$ inches long, six to ten white flowers in each umbellate raceme, and nearly globular brown fruits about three-fifths of an inch long. (Adapted from *Rehder, Proceedings of the American Academy of Arts and Sciences*, vol. 50, pp. 234-235.)

44056. PYRUS USSURIENSIS Maxim.

A tree native of Amur and Ussuri, Siberia, from 20 to 30 feet high, with broadly oval, sharply serrate, acuminate leaves, many-flowered racemes of white flowers, and roundish oval, umbilicate, mild-flavored fruits over an inch in diameter, crowned by a persistent calyx. In autumn the foliage turns a shining brownish red, making the tree very ornamental. (Adapted from *E. Regel, in Gartenflora*, vol. 10, pp. 374-375.)

44057 and 44058. VICIA FABA L. Fabaceæ. **Broad bean.**

From Tiflis, Caucasus, Russia. Presented by the chief specialist, Plant Breeding Department, Tiflis Botanic Garden. Received January 2, 1917.

44057. Beans nearly circular in outline and of a dark reddish brown color.

44058. Beans approximately oblong and of a much lighter color.

44059 and 44060.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received January 12, 1917.

44059. CHAMAEDOREA sp. Phœnicaceæ. **Pacaya palm.**

"(No. 79a. *Pacaya* palm from Coban, December 13, 1916.) Nearly every garden in Coban contains a number of these small, attractive palms, planted not so much for ornament as for the edible inflorescences

44059 and 44060—Continued.

which they produce. In other parts of Alta Vera Paz the pacaya is also quite common, and it is grown in the southern part of Guatemala as well. Since it succeeds here at elevations of 5,000 feet or even higher, where the winters are quite cool, it would seem that it ought to be a success in southern California and Florida, though it is difficult to predict what effect the sandy soil of the latter State may have upon it. The palm grows to a height of 15 feet, having a slender stem about 2 inches in diameter and handsome leaves, somewhat reminding one of *Chrysalidocarpus lutescens* (*Areca lutescens*). The foliage is of a rich-green color. The inflorescences are produced along the trunk in the winter and spring, and apparently more or less throughout the year. Before the spathe has opened it is removed from the palm, opened, and the tender inflorescence, nearly white in color and finely branched, is removed and eaten. Its preparation for the table consists in dipping it in a batter made of eggs and then frying it; in enveloping it in an omelet; in boiling it and serving it as a vegetable; or in mixing it with other vegetables to form a salad. When very young and tender its flavor is agreeable, but when older and nearly ready to emerge from the spathe it has a strongly bitter taste, which makes it disagreeable. It should therefore be used when quite young. The pacaya palm grows in a variety of soils, seeming to do well on clay and also on black sandy loam. An abundance of lime in the soil does not seem to injure it. It is frequently planted in gardens among coffee bushes, and in many sections it is planted beneath large trees, where it has partial shade. I have seen many beneath large avocado trees, interplanted with coffee bushes. It may be necessary to furnish shade for the palms in California and Florida by means of a slat house or some such device, or they might be planted beneath large trees, as they are in Guatemala. The pacaya as an article of food is extensively used in Guatemala and by local standards commands a good price, single inflorescences usually selling at two to five for a peso ($2\frac{1}{2}$ cents). The spathes are pulled from the palms, tied together in small bundles, and thus brought to market." (*Popenoe*.)

44060. *VITIS TILIAEFOLIA* Humb. and Bonpl. Vitaceæ.
(*V. caribaea* DC.)

Grape.

"(No. 81a. Guatemala, Guatemala, December 29, 1916.) A native grape sold in the markets of Guatemala. The bunches are about the size of those of *Vitis caribaea* and the berries very similar; it may, in fact, be this species, though I do not know whether or not *V. caribaea* occurs in Guatemala. The fruit is used to make jelly. For trial in southern Florida in connection with the work of producing a grape adapted to tropical and subtropical conditions." (*Popenoe*.)

44061. *ALEURITES TRISPERMA* Blanco. Euphorbiaceæ.

Soft lumbang.

From the Philippine Islands. Presented by Mr. A. W. Prautch, through Mr. Adn. Hernandez, director, Manila Bureau of Agriculture. Received January 22, 1917.

"Mr. Prautch has returned from his trip to Cavite Province with seeds and leaves of *Aleurites trisperma*. The nuts were picked up under the trees, where they had been lying since last August, in which month the tree fruits. As you have already successfully introduced *Aleurites moluccana* in the United States,

it is quite possible that *A. trisperma* will also be successful. It is believed that the soft-shelled kind (*A. trisperma*) is superior, for in addition to the nut being easier to crack, the Bureau of Science has found that the oil so closely approximates the Chinese tung oil as to be practically indistinguishable therefrom. There is a slight difference between this oil and that of *A. moluccana*." (*Hernandez*.)

44062. TRITICUM AESTIVUM L. Poaceae.

Wheat.

(*T. vulgare* Vill.)

From Yokohama, Japan. Purchased from the Yokohama Nursery Co.
Received January 22, 1917.

"Grown on the slope of Mount Fuji." (*S. Iida*.)

44063. AVENA SATIVA L. Poaceae.

Oats.

From Paris, France. Presented by Messrs. Vilmorin-Andrieux & Co.
Received January 30, 1917.

"Very early black hybrid." (*Vilmorin-Andrieux & Co.*)

44064 and 44065.

From Londiani, Kenia. Presented by Mr. J. H. Cameron, Londiani Farms (Ltd.). Received January 30, 1917.

44064. CYPHOMANDRA BETACEA (Cav.) Sendt. Solanaceae. Tree-tomato.

"This seed grows in my garden; it is a cultivated plant, but I do not know where it comes from; it is in every garden hereabouts. We call it the *Cape tomato*, but it is not a tomato, nor do I suppose that it ever saw the Cape, i. e., the Cape of Good Hope. The early settlers in this country mostly came up from the Cape after the South African war, and got into the habit of calling everything they saw after something else that they knew in South Africa. It is a tree growing up to 10 feet high, with large glossy green and purple leaves. The fruit is exactly like an English plum, both in size and appearance (an average one I have here on my desk, plucked at random, measures $2\frac{1}{2}$ inches in length and 6 inches in circumference); the skin is purple and the flesh a bright yellow; like *Physalis peruviana* it can be eaten raw, stewed, made into jam, or, as you say in America, preserves, and used in making pies. It does not grow wild here and must have been brought from some other country, probably by missionaries." (*Cameron*.)

44065. PHYSALIS PERUVIANA L. Solanaceae.

Poha.

"Seeds of an economic plant which we call the *Cape gooseberry*. A yellow-colored fruit about the size of a large cultivated cherry, but round and not oval like a real gooseberry. It is a most excellent fruit to eat either raw or stewed, and it can be eaten with cream, in pies, or preserved. It is very prolific, rather in danger of becoming a weed and running away with the garden, but not any more so than your own raspberry or blackberry. As to habitat, I find it growing as low as 6,000 feet above the level of the sea, which is low for East Africa. Here at Londiani it is very plentiful. We are 8,000 feet above sea level. It grows in cultivated gardens and also wild by the roadside and in wild bushy places. I was astonished on one occasion to find it growing most profusely away up on the top of Mount Londiani at 10,000 feet above

44064 and 44065—Continued.

sea level, on which occasion I may say it about saved my life. I had ridden up there at dawn for the purpose of shooting buffalo, which I did, and then lost my guides in a great bamboo forest and wandered about for many hours; I finally came to an open place and found many of these plants growing, and being very hungry I devoured many of the fruits. I found them both meat and drink." (*Cameron.*)

44066. COLOCASIA ESCULENTA (L.) Schott. Araceæ. Taro.

From Oilla, Tex. Tubers presented by Mr. S. Kato. Received January 24, 1917.

"*Yatsu-gashira-imo.* A Japanese variety of taro of the dasheen type. It is said to be the best variety grown in Japan. These specimens grown in Texas, though very small, were mealy and of fine flavor." (*R. A. Young.*)

44067. VICIA FABA L. Fabaceæ. Broad bean.

From Amsterdam, Netherlands. Procured through Mr. Frank W. Mahin, American consul. Received January 23, 1917.

"Seeds of the broad bean, called by the Dutch *Duizenboon.*" (*Mahin.*)

44068. DIOSPYROS KAKI L. f. Diospyraceæ. Kaki.

From Hangchow, China. Presented by Dr. D. Duncan Mahin. Numbered February 5, 1917.

A variety sent in without description.

44069. ZIZANIA LATIFOLIA (Griseb.) Stapf. Poaceæ. Wild rice.

From China. Plants collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received January 3, 1917.

"(No. 1261. Peking, China, November 20, 1916.) A Chinese wild rice, cultivated in standing water. The young sprouts are eaten in the spring while later on the shoots, swollen through the action of a fungus, are eaten in much the same way as bamboo. Chinese name *chiao pai.*" (*Meyer.*)

For an illustration of the shoots of wild rice, known as *kau ba*, used as a vegetable, see Plate II.

44070 and 44071.

From Wellington Point, near Brisbane, Queensland, Australia. Presented by Mr. James Pink. Received January 22, 1917.

44070. CARICA PAPAYA L. Papayaceæ. Papaya.

"Seeds of a good variety of papaw, grown from seed of my own selection." (*Pink.*)

44071. CASSIA EREMOPHILA A. Cunn. Casalpiniaceæ.

"A very handsome flowering shrub." (*Pink.*)

A woody plant, found in Australia in all the colonies except Tasmania. The leaves are composed of two pairs of very narrow leaflets, and the pods are very smooth. In Australia both the pods and the leaves of this plant are eaten by stock. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 121, and from *Vogel, Synopsis Generis Cassiæ*, p. 17, as *Cassia nemophila*.)

44072. SIDEROXYLON AUSTRALE (R. Br.) Benth. and Hook. Sapotaceæ.

From Brisbane, Australia. Presented by Mr. J. F. Bailey, director, Botanic Gardens. Received January 22, 1917.

A tree, sometimes attaining a large size, from southeastern Australia. The leaves, which are quite variable in shape, are mostly 3 to 4 inches long, and the flowers occur in axillary clusters. The purplish, nearly round fruits are 2 inches in diameter and are of a coarse, insipid flavor. The wood is dark colored, close grained, prettily veined, and is used for cabinetwork, carving, etc., but requires careful seasoning. (Adapted from *Maiden, Useful Native Plants of Australia*, pp. 367-368, as *Achras australis*, and from *Bailey, Queensland Flora*, p. 958.)

44073 to 44075.

From Ceylon. Presented by Father Jerome, St. Leo College, St. Leo, Fla. Received January 22, 1917.

**44073. DEGUELIA DALBERGIODES (Baker) Taub. Fabaceæ.
(*Derris dalbergioides* Baker.)**

A small, spreading tree, 15 to 20 feet high, found in the Malay Archipelago and Java. The branchlets are brown-silky, the dark green, compound leaves are 6 to 8 inches long; the rose-colored flowers are in numerous short-stalked racemes; and the thin, flat pods are up to 2½ inches long. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 241.)

**44074. LAGERSTROEMIA SPECIOSA (Muenchh.) Pers. Lythraceæ.
(*L. flos-reginæ* Retz.)**

A tree, 50 to 60 feet in height, with leaves from 4 to 8 inches long and large panicles of flowers, which vary from rose to purple, changing color during the day. This is the chief timber tree in Assam, eastern Bengal, India, and also in Burma. It occurs along river banks and on low swampy ground and is commonly cultivated as an avenue tree. No special care is used in growing this tree, which is felled when from 30 to 50 years of age. The timber is used for shipbuilding, boats, etc., being very durable under water. It has been introduced into southern California. (Adapted from *Watt, Commercial Products of India*, p. 701, and from *Bailey, Standard Cyclopædia of Horticulture*, p. 1775.)

44075. RHUS RUFA Teijsm. and Binn. Anacardiaceæ.

An erect, smooth-barked tree, native of the peninsula of Menado, island of Celebes, and Dutch East Indies, with leaves composed of 12 to 14 pairs of oblong lance-shaped leaflets, with reddish hairy lower surfaces, and axillary and terminal panicles of white sessile flowers. The fruits are black, dry, nearly globular drupes containing kidney-shaped seeds. The inhabitants of Menado call this *Kajoe-Kambling*. (Adapted from *J. E. Teijsman and S. Binnendijk, Natuurkundig Tijdschrift voor Nederlandsch Indië*, vol. 27, p. 52.)

44076 to 44084.

From Jamaica Plain, Mass. Cuttings presented by the Arnold Arboretum. Received January 22, 1917.

44076. CALLICARPA GIRALDIANA Hesse. Verbenaceæ.

An ornamental shrub from western China, with dentate leaves 2 to 4 inches long, dense cymes of pink flowers on hairy stalks, and violet fruits.

44076 to 44084—Continued.

If sheltered this shrub will grow in the northern parts of the United States, and if killed to the ground young shoots will spring up vigorously, producing flowers and fruits in the same season. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 2, p. 629, as *C. giraldii*.)

44077. *COTONEASTER AMBIGUA* Rehd. and Wils. Malaceæ.

See S. P. I. No. 43989 for previous introduction and description.

44078. *COTONEASTER GRACILIS* Rehd. and Wils. Malaceæ.

A shrub from western China, where it is found at altitudes of from 5,000 to 10,000 feet. It attains a height of 4 to 10 feet and has light-green leaves up to four-fifths of an inch long. The rose-colored flowers occur in lax 3-flowered corymbs and the immature fruits are about one-fifth of an inch long. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 1, pp. 167-168.)

44079. *COTONEASTER HUPEHENSIS* Rehd. and Wils. Malaceæ.

A shrub native of central and western China, up to 5 feet in height, with slender spreading branches, oval or elliptic leaves with gray wool on the lower surfaces, 6 to 12 white flowers in each of the numerous cymes, and red, nearly globular fruits about one-third of an inch in diameter. This is one of the handsomest of cotoneasters in bloom, and is hardy as far north as Massachusetts. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 2, p. 867.)

44080. *COTONEASTER NITENS* Rehd. and Wils. Malaceæ.

See S. P. I. No. 43993 for previous introduction and description.

44081. *COTONEASTER OBSCURA* Rehd. and Wils. Malaceæ.

See S. P. I. No. 43994 for previous introduction and description.

44082. *COTONEASTER RACEMIFLORA MEYERI* Zabel. Malaceæ.

A low, rather rough shrub from northern Africa and western Asia, with roundish blunt leaves, slightly hairy on the upper surfaces, short-stalked cymes of white flowers, and red fruits. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 1, p. 754, as *C. racemiflora nummularia*.)

44083. *COTONEASTER RACEMIFLORA SOONGORICA* (Reg. and Herd.) C. Schneid. Malaceæ.

An erect shrub, up to 4 feet in height, but rarely prostrate. The leaves are oval and usually somewhat obtuse, and the white flowers occur 3 to 12 in short-peduncled cymes. The fruit is red. This variety is found in northern China, Caucasia, etc. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 2, p. 867, and from *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 1, p. 754.)

44084. *COTONEASTER TENUIPES* Rehd. and Wils. Malaceæ.

See S. P. I. No. 43995 for previous introduction and description.

44085. GARCINIA DIOICA Blume. Clusiaceæ.

From Lawang, Java. Presented by Mr. M. Buysman. Received January 23, 1917.

"The fruit of this tree is eaten." (*Buysman*.)

A Javanese tree up to 60 feet high, with membranous, lance-shaped, sharp-pointed leaves up to 5 inches long, pink flowers in few-flowered axillary or terminal clusters, and nearly globular fruits up to 1½ inches in greatest diameter.

The natives of Java call this tree *ticuri* and *kemedjing*. The wood is of little use, but in some portions the fruits are sought for the sake of the taste of the seed coats. (Adapted from *Koorders and Veleton, Boomsorten op Java, Bijdrage No. 9, pp. 369-372.*)

44086. *CAMPOMANESIA FENZLIANA* (Berg) Glaziov. *Myrtaceæ*.

From Parana, Brazil. Presented by Mr. B. H. Hunnicutt, Lavras, Minas Geraes, Brazil. Received January 25, 1917.

Guabirola. A small Brazilian myrtaceous tree with foliage resembling that of the European oaks. It reaches a height of 30 to 35 feet and bears orange-yellow fruits, up to an inch in diameter, with edible pulp resembling that of the guava. (Adapted from *note of Dorsett, Shamel, and Popenoe, April 13, 1914.*)

See also S. P. I. No. 37834 for further description.

44087 to 44091.

From Linao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, Linao Experiment Station, through Mr. Adn. Hernandez, director, Bureau of Agriculture, Manila. Received January 22, 1917.

44087. *CITRUS EXCELSA* Wester. *Rutaceæ*. **Limon real.**

A tall, thorny Philippine shrub of vigorous growth and straggly habit, with thick, leathery leaves and thin-skinned smooth fruits up to 3 inches in diameter, with very juicy, mildly acid pulp. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 22.*)

See also S. P. I. No. 41714 for further description.

44088. *CITRUS MEDICA NANA* Wester. *Rutaceæ*. **Dwarf citron.**

A small thorny shrub, rather common in the Philippines, rarely exceeding 2 meters in height, being probably the smallest species in the genus. It has small, sharp spines; narrowly oblong, serrate leaves 7 to 11 cm. long; axillary or terminal, rather loose cymes of white flowers with slight purple tinges on the outside; and roundish egg-shaped, smooth, yellow fruits 2½ inches or more long, with grayish to greenish, acid, rather dry pulp containing many small flattened, smooth seeds. The Filipinos eat the fruit, but it is too dry to be cultivated for the flesh, and the skin is too thin to be used as citron peel. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 19.*)

See also S. P. I. No. 39581 for further description.

44089. *CITRUS MEDICA ODORATA* Wester. *Rutaceæ*.

Tihi-tihi. A small, thorny Philippine shrub about 8 feet in height, with rather thick, serrate leaves, white flowers, and fruits up to 4 inches in diameter, with somewhat dry, sharply acid pulp. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 18.*)

See also S. P. I. No. 41717 for further description.

44090. *GENIPA AMERICANA* L. *Rubiaceæ*. **Genipa.**

A large stately tree, native of the American Tropics, growing 60 feet in height, with dark-green leaves a foot or more long. The edible fruits are about the size of an orange. (Adapted from *note of Dorsett and Popenoe, April 13, 1914.*)

See also S. P. I. No. 37833 for further description.

For an illustration of the Brazilian genipa, see Plate III.



THE BRAZILIAN GENIPA (*GENIPA AMERICANA*, S. P. I. No. 44090).

Outside of its native region this fruit is little known. In eastern Brazil it is commonly used, and it is also grown in the West Indies. The russet fruits, sometimes nearly 4 inches long, have the flavor of the quince. The tree can be grown only in regions free from severe frosts. See also S. P. I. No. 34882. (Photographed by P. H. Dorsett, Bahia, Brazil, November 12, 1913; P25009FS.)



THE IMODON ASH OF TURKESTAN (*FRAXINUS POTAMOPHILA*, S. P. I. No. 44132).

During his expedition to Chinese Turkestan, Mr. Meyer took the photograph reproduced above at Khanaka and obtained some of the seeds shown hanging on the tree. This species of ash, under the trying conditions of great drought, intense heat, and soil alkali of that region, made a valuable shade tree. Under S. P. I. No. 30652; the trees grown from these seeds were distributed in 1912. In 1915, some young trees were growing at the Fallon Field Station in Nevada. These promised so much for that treeless region that, through the kindness of the British vice consul, Mr. George MacCartney, more seeds (S. P. I. No. 44132) were imported, with which to make a wide distribution. (Photographed by Frank N. Meyer, Khanaka, Chinese Turkestan, December 5, 1910; P5617FS.)

44087 to 44091—Continued.**44901.** *UVARIA RUFA* (Dunal) DC. Annonaceæ.

Bananae. A much-branched shrub from Java with a stem about the diameter of a man's arm; alternate, elliptic-oblong, acute or obtuse leaves $2\frac{1}{2}$ to 5 inches long; and purplish red, solitary flowers about an inch wide. The oblong, kidney-shaped, red fruits about $1\frac{1}{2}$ inches long, in bunches of 18 or 20, contain whitish, scant, juicy, aromatic, subacid flesh without a trace of sugar and containing many seeds. (Adapted from *Blume, Flora Java, Annonaceæ*, pp. 19-20, pl. 4, and from the Philippine Agricultural Review, vol. 6, no. 7, p. 321.)

44092. LAUROCERASUS ACUMINATA (Wall.) Roemer. Amygdalaceæ.
(*Prunus acuminata* Hook. f.)

From Darjiling, India. Presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden. Received January 29, 1917.

"Freshly gathered seed." (Cave.)

A tree 30 to 40 feet high, found in the temperate portions of the central and eastern Himalayas at elevations of from 4,000 to 7,000 feet. The slender branches are covered with flat, smooth leaves 4 to 7 inches long and bear yellowish white flowers a quarter to one-third of an inch wide in many-flowered racemes. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 317.)

See also S. P. I. No. 41813 for previous introduction.

44093. EUCHLAENA MEXICANA Schrad. Poaceæ. **Teosinte.**

From Zomba, Nyasaland. Presented by Mr. J. Stewart J. McCall, Director of Agriculture. Received January 30, 1917.

"Out in Nyasaland I find this a most valuable forage plant, either when fed green to cattle or as hay. I consider it to be the best yielding forage plant I have yet experimented with, and I believe it worthy of special attention in warm districts." (McCall.)

44094. ROLLINIA sp. Annonaceæ.

From Bogota, Colombia. Presented by Mr. M. T. Dawe, Director of Agriculture and Agricultural Adviser to the Government. Received February 2, 1917.

"A shrub of the tropical parts of the Department of Magdalena, which affords an edible orange-colored fruit; the flesh is also of orange color." (Dawe.)

44095. ALEURITES FORDII Hemsl. Euphorbiaceæ. **Tung-oil tree.**

Plants grown at the plant-introduction field stations from seed received from various sources. Numbered for convenience in distribution in 1917.

Plants grown under Yarrow Nos. 2157, 2158, 2159, 3522, and Chico No. 16151.

44096 to 44098.

From Amoy, China. Presented by Mr. H. Hoyle Sink, American consul. Received January 11, 1917.

44096. ANDROPOGON INTERMEDIUS R. Br. Poaceæ. **Grass.**

An erect grass, with rather narrow leaves and slender spikes, growing in large clumps 2 feet or more in height. It is a native of Australia,

44096 to 44098—Continued.

where it is used as a forage grass. It is readily propagated from the roots. (Adapted from *Bentham and Mueller, Flora Australiensis*, pp. 531-532, and from the *Agricultural Gazette, New South Wales*, May 2, 1914.)

44097. ARTHRAXON BREVIAESTATUS Hack. Poaceæ.

Grass.

A tall, graceful grass found in eastern India and China, with culms 50 to 60 cm. high and leaf blades up to 2 inches in length by half an inch in width. (Adapted from *DeCandolle, Monographia Phanerogamarum*, vol. 6, pp. 350-351, 1889.)

44098. CAPRIOLA DACTYLON (L.) Kuntze. Poaceæ.

Bermuda grass.

(*Cynodon dactylon* Pers.)

A pasture and lawn grass for the Southern States; a rather variable species.

44099. SACCHARUM OFFICINARUM L. Poaceæ.

Sugar cane.

From Cienfuegos, Cuba. Presented by Mr. Robert M. Grey, Harvard Experiment Station. Received February 3, 1917.

"Harvard No. 6301. Seeds of one of my hybrid canes, which is very prolific and germinates freely when sown in the open ground here." (Grey.)

44100. CANARIUM AMBIONENSE Hochr. Balsameaceæ.

From Buitenzorg, Java. Presented by the director, Jardin Botanique. Received February 3, 1917.

This beautiful tree, which grows to a height of about 90 feet, so resembles *Canarium moluccanum* in general habit and in the leaves that the two can scarcely be distinguished, although the fruit is different. The bark is smooth and white. The fruit of this species is oblong, pointed at both ends, with the angles sharp toward the ends and somewhat flattened toward the middle. This tree is found in the island of Amboina, Celebes. (Adapted from *Hochreutiner, Plantae Bogoriensis Exsiccatæ*, p. 55.)

"The seeds are eaten as a table nut, and an emulsion of the oil extracted from the seed is considered an excellent baby food." (Fairchild.)

44101. CANARIUM OVATUM Engl. Balsameaceæ.

Pili nut.

From Camarines, Philippine Islands. Presented by Dr. E. B. Copeland, dean, College of Agriculture, Los Banos, P. I. Received February 8, 1917.

A tree, native of the Philippines, with compound leaves and triangular drupes containing one seed. These seeds are eaten throughout the eastern part of the world, and from them is extracted an oil which is used for table purposes and also for burning in lamps. (Adapted from *notes of H. H. Boyle, assistant horticulturist, Manila, P. I.*)

See also S. P. I. No. 38372 for further distribution.

44102. PYRUS COMMUNIS L. Malaceæ.

Pear.

From Hamilton City, Calif. Presented by Mr. James Mills. Received January 18, 1917.

"Scions from an old pear tree that was planted by the Mission Fathers about 60 years ago. This tree has not shown any evidence of pear-blight, although blighted trees have been growing in its vicinity." (Peter Bisset.)

44103. HELIANTHUS ANGUSTIFOLIUS L. Asteraceæ. Sunflower.

Grown at the Plant Introduction Field Station, Chico, Calif., from seed collected by Dr. David Griffiths. Numbered February 13, 1917.

"This native sunflower is said to occur from New Jersey to Florida and westward to Texas. It attracted the collector's attention in a native condition on the prairies of Arkansas, where it grows most luxuriantly. There are several characteristics which adapt it to ornamental uses: The general habit of the plant is pleasing; it has a small flower with long, graceful rays; the foliage is narrow, long, drooping, and glossy; the main stem and each of its branches are long, graceful peduncles; but, best of all, it will cut and come up again and is perennial in habit. These characteristics make this plant valuable for tall massing effects, like the cosmos, as well as for cutting purposes. The seed distributed this season is from a single variety of this very variable and widely distributed species. Many other forms exist, and doubtless in the hands of horticulturists it will be found capable of much improvement. Some of its varieties are bushy, and all can be pinched back to a bushy form." (*Griffiths.*)

44104. PERSEA AMERICANA Mill. Lauraceæ. Avocado.

(*P. gratissima* Gaertn. f.)

From Honolulu, Hawaii. Cuttings presented by Mr. Donald MacIntyre, Moanalua Gardens. Received February 8, 1917.

"*Moanalua*. A chance seedling 19 years of age growing on the estate of Hon. S. M. Damon, Moanalua. Form pyriform; size small to medium; cavity flaring, deep; stem somewhat short, rather thick; surface undulating, hard, coriaceous and slightly pitted; color dark green with medium abundant small irregular-shaped yellowish dots; apex a mere dot; skin medium thick, separating readily from the pulp; flesh yellowish in color, running into green at the rind, fine grained, melting and somewhat buttery. 70 per cent of the fruit; seed medium large, conical, fitting tightly in the seed cavity; flavor rich and nutty. Season, July to September. The tree is very vigorous. Height, 30 feet, spread 25 feet." (*Hawaii Agricultural Experiment Station Bulletin No. 25, p. 43.*)

"*Moanalua*, the round variety. This is not an easy thing to bud, and all the plants we have have been inarched. A good avocado, one of our best, it is a late variety, however, and on that account might not be as suitable for the climate of Florida as some of the early kinds." (*MacIntyre.*)

44105 to 44107. TRIFOLIUM PRATENSE L. Fabaceæ. Red clover.

From Denmark. Presented by Mr. H. Hertel, Danish Royal Agricultural Society, Copenhagen. Received February 8, 1917.

44105. "*Tystofte* No. 71, an early red clover. Furnished by the experimental station at Tystofte, near Tjaereby on Sealand. The seed raising of early red clover in general is, at the present time, sparse here in Denmark, where favorable conditions for the fecundations are lacking.

"For further information, see the 70th Beretning fra Statens Forsøgsvirksomhed i Plantekultur, page 216." (*Hertel.*)

44106. "*Tystofte* No. 87, a late clover. Furnished by the experimental station at Tystofte, near Tjaereby on Sealand. This is a new form, obtainable so far only in small quantities.

"For further information, see the 95th Beretning fra Statens Forsøgsvirksomhed i Plantekultur, page 392." (*Hertel.*)

44105 to 44107—Continued.

44107. "*Hersnap*, a late red clover. Furnished by the seed-raising society (Danske Landboforeningers Frøforsyning), Roskilde. This is the best species, being used largely at the present time.

"For further information, see the 95th Beretning fra Statens Forsøgsvirksomhed i Plantekultur, page 392." (*Hertel.*)

44108. DIOSPYROS KAKI L. f. Diospyraceæ.**Kaki.**

From Kioshan, Honan, China. Cuttings presented by Dr. Nathanael Fedde, American Lutheran Mission. Received January 22, 1917.

"The Honan red persimmon is of a size like that of the average tomato, and were it not for the large stiff calyx would be almost indistinguishable from one. Commonly, no seeds occur, but some have as many as four or five. The taste is sweet almost to a fault, with no suggestion of pucker unless the core is eaten. The juice leaves a permanent stain in linen." (*Fedde.*)

44109. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Santiago de las Vegas, Cuba. Presented by Mr. J. T. Crawley, director, Agricultural Experiment Station. Received February 12, 1917.

"*Demerara 74.*"

44110. CARICA PAPAYA L. Papayaceæ.**Papaya.**

From Brooksville, Fla. Presented by Mr. James Jennings, through Mr. J. E. Morrow. Received February 12, 1917.

"Seeds of a small-fruited highly flavored papaya. This tree seems to be unusually hardy and to endure considerable frost. Ripe fruit gathered from tree on February 5, 1917." (*Morrow.*)

44111 and 44112. CARICA PAPAYA L. Papayaceæ.**Papaya.**

From Pago Pago, American Samoa. Presented by Mr. J. M. Poyer, governor. Received February 12, 1917.

44111. "*Esi fafine.* Native of Samoa." (*Poyer.*)

44112. "*Esi palagi.* Introduced in Samoa." (*Poyer.*)

44113 and 44114.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received January 29, 1917.

44113. *AESCHYNOMENE* sp. Fabaceæ.

Yellow sensitiva. See S. P. I. No. 44040 for previous introduction and description.

44114. *COCCOLOBIS UVIFERA* L. Polygonaceæ.

"*Jarra.* Dense, small tree, with small very light-green leaves. A fine plum; seed one-third to two-fifths of the whole fruit, subacid. Hot climate." (*Wercklé.*)

44115. LYCOPERSICON ESCULENTUM Mill. Solanaceæ.**Tomato.**

From Lima, Peru. Presented by Mr. E. E. Wright, at the request of Mr. W. G. Bixby, Brooklyn, N. Y. Received February 16, 1917.

"*Tomate silvestre.*"

44116. FICUS PADIFOLIA H. B. K. Moraceæ.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received January 29, 1917.

"This tree differs completely from the rest of the genus in its superb form. It is very large and very dense and of an exceptionally beautiful color. It is evergreen, while nearly all the other species are bare for a longer or shorter time during the dry season. The fruit is apparently very much liked by birds, and the trees are always full of little parrots. Plant in fibrous fern peat or in turf with a little old mortar (ground) and a little charcoal dust or in common vegetable peat with ground mortar (sand and lime) and charcoal dust." (Wercklé.)

44117. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. Tomato.

From Lima, Peru. Presented by Mr. E. E. Wright, at the request of Mr. W. G. Bixby, Brooklyn, N. Y. Received February 16, 1917.

"Cultivated Peruvian tomato from Lurin Valley." (Wright.)

44118. RHYNCHOSIA sp. Fabaceæ.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received January 29, 1917.

"*Yellow vetch*. A small blooming annual forage plant, growing now in the dry season, while the *yellow sensitiva* [S. P. I. No. 44113] is completely dried. After the *yellow sensitiva*, our best soil enricher." (Wercklé.)

44119. PSYCHOTRIA BACTERIOPHILA Valet. Rubiaceæ.

From Buitenzorg, Java. Roots presented by Mr. P. J. S. Cramer, chief, Plant Breeding Station. Received February 14, 1917.

A shrub, 2 to 3 meters high, native of the Comoro Islands, Madagascar. The elliptic or ovate-oblong, fleshy, dark-green leaves are short petioled and usually thickly covered with little tubercles formed by bacteria. The greenish white flowers are in numerous dense thyrses up to 3 inches long, and the fruits are subglobular drupes about a quarter of an inch in diameter. (Adapted from Valeton, *Icones Bogorienses*, vol. 3, pl. 271.)

See also S. P. I. No. 44295 in this inventory for notes on these bacterial leaf nodules in the Rubiaceæ.

**44120 to 44122. CHAYOTA EDULIS Jacquin. Cucurbitaceæ.
(*Seschium edule* Swartz.) Chayote.**

From Funchal, Madeira. Presented by Mr. J. E. Blandy. Received February 12, 1917.

"*Pipinella* or *chu-chu*." (Blandy.)

44120. Large smooth green.

44122. Large smooth white.

44121. Medium spiny green.

44123 to 44126.

From Cairo, Egypt. Presented by the director, Horticultural Division, Ministry of Agriculture, Gizeh Branch. Received January 5, 1917.

44123. CASSIA BICAPSULARIS L. Cesalpiniaceæ.

A shrub, found throughout tropical and subtropical South America and cultivated in tropical Asia, 2 to 3.5 meters high, with compound

44123 to 44126—Continued.

leaves up to 9 cm. long, yellow flowers, and curved or straight pods up to 15 cm. long by 1.5 cm. wide. In Porto Rico this shrub is known by the native names of *sen del pais* and *hoja de sen*. (Adapted from Perkins, *Contributions from the National Herbarium*, vol. 10, p. 158.)

44124. CROTALARIA JUNCEA L. Fabaceæ.**Sunn hemp.**

An erect yellow-flowered annual, 4 to 5 feet high, native of tropical Asia generally and commonly occurring in the dry region of Ceylon. It is cultivated in many places in India and also in northern Ceylon for the sake of the strong and useful fiber obtained from the stems. This fiber is used in India for making coarse canvas, cordage, and fishing nets, and an average yield is about 640 pounds an acre. A light, rich soil is considered best for growing this plant, although with cultivation it may be grown on almost any soil. (Adapted from Macmillan, *Handbook of Tropical Gardening and Planting*, pp. 549-550.)

44125. GLYCOSMIS sp. Rutaceæ.

Received as *Glycosmis pleiogyne* for which no place of publication has been found. This is probably merely a garden name for a form of *G. pentaphylla*, a small spineless shrub with dark-green glossy leaves, small fragrant white flowers, and translucent pinkish berries.

44126. WIGANDIA URLINS (Ruiz and Pav.) H. B. K. Hydrophyllaceæ.

A tall, coarse, woody perennial, from the mountainous regions of Mexico, with ovate, rusty hairy leaves, one-sided spikes of violet flowers, and densely hairy capsules. Propagation is generally by seed. The chief value of wigandias is as foliage plants for subtropical bedding; they can not endure frost. (Adapted from Bailey, *Standard Cyclopædia of Horticulture*, vol. 4, p. 1975.)

44127. DAVIDIA INVOLUCRATA VILMORINIANA (Dode) Hemsl. Cornaceæ.

From Paris, France. Presented by Vilmorin-Andrieux & Co. Received February 10, 1917.

A western Chinese tree, 40 to 50 feet high, with alternate, bright-green, ovate, coarsely serrate leaves 2 to 4½ inches long and inconspicuous flowers in terminal, globular heads about an inch long. In the British Isles this tree is quite hardy, and though it can be propagated by cuttings the plants raised from seeds show the greatest vigor. (Adapted from Curtis's *Botanical Magazine*, vol. 138, p. 8432.)

44128. SOLANUM sp. Solanaceæ.**Wild potato.**

From Ciudad Lerdo, Durango, Mexico. Tubers presented by Dr. Elswood Chaffey, through Dr. J. N. Rose, United States National Museum. Received February 20, 1917.

"I have often heard of these native potatoes, but until now have not seen them. I presume that you already know them, but I think that sometimes a fresh lot may be useful to cross with the cultivated varieties to produce, if possible a stock more resistant to the ills that potatoes may be prone to." (Chaffey.)

44129. DATURA DISCOLOR Bernh. Solanaceæ.

From Bard, Calif. Presented by Mr. C. E. Peterson, Yuma Experiment Farm. Received February 12, 1917.

A low, somewhat hairy, annual herb, found in Colorado, Arizona, and south-eastern California. It has more or less deeply toothed leaves and purplish white flowers 2 or 3 inches long. The thickish seeds are dark colored with wrinkled or pitted crustaceous coats. (Adapted from *Gray, Synoptical Flora of North America*, vol. 2, p. 240.)

44130. DIOSPYROS EBENASTER Retz. Diospyraceæ. Black sapote.

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder. Received February 12, 1917.

An ornamental Mexican tree with oblong-oval glossy leaves about 4 inches long and light-green edible fruits up to 4 inches in diameter with very dark-brown sweetish pulp. (Adapted from *note of Wilson Popenoe, under S. P. I. No. 39719*, which see for further description.)

44131. HIBISCADELPHUS GIFFARDIANUS Rock. Malvaceæ.

From Honolulu, Hawaii. Presented by Mr. Joseph F. Rock, College of Hawaii. Received February 13, 1917.

A rather low Hawaiian tree with an inclined trunk about a foot in diameter, deep magenta flowers, and large yellowish capsules. (Adapted from *Rock, Indigenous Trees of the Hawaiian Islands*, p. 299.)

See also S. P. I. No. 42879 for further description.

44132 to 44134. FRAXINUS POTAMOPHILA Herd. Oleaceæ. Ash.

From Kashgar, Chinese Turkestan. Presented by Mr. George MacCartney, British consul general, through Mr. Walter Hines Page, ambassador, London. Received February 15, 1917.

"*Imodon*. The consul general states that, so far as he is aware, there is no special difference of climate or soil between Kashgar or Khotan, nor is there any difference in the ash trees of these two places." (*Page*.)

44132. "Package No. 1. Seeds gathered at Kashgar."

44133. "Package No. 2. Seeds gathered at Kashgar."

44134. "Package No. 3. Seeds gathered at Kashgar."

See S. P. I. Nos. 30414 and 30652 for previous introductions.

For an illustration of the *Imodon* ash, see Plate IV.

44135 to 44142.

From the Philippine Islands. Presented by Mr. P. J. Wester, through Mr. Adn. Hernandez, director, Bureau of Agriculture, Manila. Received February 8, 1917.

44135. *CARICA PAPAYA* L. Papayaceæ.

Papaya.

"Grown in Luzon Province."

44136. *CITRUS LIMETTA AROMATICA* Wester. Rutaceæ.

Dalayap. "No. 741. Grown in Luzon Province."

A spiny Philippine shrub collected at Palawan, with slender willowy branches, dull-green ovate-elliptic serrate leaves up to 10 cm. long,

44135 to 44142—Continued.

purplish white flowers borne singly or in terminal or axillary cymes, and roundish, smooth, lemon-yellow fruits 5 cm. long with thin skin, pale-green, juicy, sharply acid pulp, and very numerous small seeds. (Adapted from the *Philippine Agricultural Review*, first quarter, 1915, p. 25.)

44137 and 44138. CITRUS MEDICA NANA Wester. Rutaceæ.

Dwarf citron.

A small thorny shrub, collected at Cebu, rather common in the Philippines, with loose cymes of purplish white flowers and roundish egg-shaped, smooth, yellow fruits $2\frac{1}{2}$ inches or more long. (Adapted from the *Philippine Agricultural Review*, first quarter, 1915, p. 23.)

44137. "No. 27. Grown in Luzon Province."

44138. "No. 2384. Grown in Luzon Province."

44139. CITRUS MEDICA ODORATA Wester. Rutaceæ.

Tihi-tihi. "Grown in Luzon Province."

See also S. P. I. Nos. 41717 and 44089 for further description.

44140. CITRUS MITIS Blanco. Rutaceæ.

Calamondin.

"No. 2534. Grown in Luzon Province."

A small, somewhat spiny Philippine tree, 4 to 6 meters high, with oblong elliptic leaves up to 9 cm. long, axillary, usually solitary, white fragrant flowers 21 mm. wide, and globular, orange-yellow, smooth, thin-skinned fruits 2 to 4 cm. long, with orange-colored, acid, juicy pulp containing large, smooth seeds. The calamondin, both wild and cultivated, is widely distributed in the Philippines, and the trees are nearly always very prolific. (Adapted from the *Philippine Agricultural Review*, first quarter, 1915, pp. 12-13.)

"This is now widely distributed in Florida, under the incorrect name of Panama orange, from early distributions of S. P. I. No. 2886, which came from Panama." (*Fairchild.*)

44141. PENNISETUM CILIARE (L.) Link. Poaceæ.

Grass.

(*P. cenchroides* Rich.)

A low, spreading, perennial grass with short spikes.

44142. CARICA PAPAYA L. Papayaceæ.

Papaya.

"Grown in Cavite Province."

44143. AESCHYNOMENE sp. Fabaceæ.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received February 14, 1917.

"*Yellow sensitiva.* Best soil improver; not troublesome. Hand-picked seed; free from weeds." (*Wercklé.*)

See also S. P. I. Nos. 44040 and 44113 for previous introductions and description.

44144. STIZOLOBIUM NIVEUM (Roxb.) Kuntze. Fabaceæ.

Velvet bean.

From Mowbray, Cape Province, South Africa. Purchased from Messrs. C. Starke & Co. Received February 14, 1917.

Kudu-Laing bean, said to be a hybrid velvet bean.

44145 to 44151.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 9, 1917.

44145. PYRUS USSURIENSIS Maxim. Malaceæ. Pear.

"(No. 126b. Peking, China, December 29, 1916.) Twelve large and twelve small specimens of the Peking white pear, *Pai li*, some with and others without calyx." (Meyer.)

Received as *Pyrush simonii*, which is now referred by Mr. Rehder to *P. ussuriensis*.

44146. PYRUS LINDLEYI Rehder. Malaceæ. Pear.
(*P. sinensis* Lindl.)

"(No. 127b. Peking, China, December 19, 1916.) *Hung hsiao li*, meaning 'red smile pear.' A remarkable pear of apple shape, with a bright-red blush on one side, while the other side is yellowish, often tinged with green; meat sour and hard; calyx deciduous; peduncle long. A very good keeper and shipper. Of value in breeding experiments. Scions sent under No. 1266 [S. P. I. No. 44164]." (Meyer.)

44147. PYRUS USSURIENSIS Maxim. Malaceæ. Pear.

"(No. 128b. Tsunhwachow, Chihli Province, China, December 9, 1916.) Specimens of the 'big sour pear,' *Ta suan li*, showing size and persistency of calyx. Scions sent under No. 1272 [S. P. I. No. 44169]." (Meyer.)

44148. PYRUS USSURIENSIS Maxim. Malaceæ. Pear.

"(No. 129b. Tsunhwachow, Chihli Province, China, December 9, 1916.) Specimens of the 'eight li fragrant pear,' *Pa li hsiang li*. Notice persistent calyx, short peduncle, and fine aroma." (Meyer.)

44149. PICEA MEYERI Rehd. and Wils. Pinaceæ. Spruce.

"(No. 133b. Shinglungshan, Chihli Province, China, December 3, 1916.) A tall-growing spruce, often having bluish needles." (Meyer.)

"This quadrangular-leaved spruce is characterized by its hairy shoots, curved nonpungent leaves, and medium-sized symmetrical cones with rounded or truncate scales. It is most closely related to *Picea gemmata* Rehd. and Wils., which has similarly hairy shoots, more densely hairy buds, very pungent leaves, and larger cones with much broader scales. It is also related to *P. asperata* Masters, which has paler, more yellow, less pubescent shoots, slightly pungent leaves, larger cones with rhombic scales paler in color, and winter buds with more loosely appressed and more recurved scales. The shoots in *P. meyeri* show great variation in degree of pubescence, and this is not constant from year to year on the same branch. One year a shoot may be densely pubescent and the next year the new shoot on the same branch almost glabrous." (Sargent, *Plantae Wilsonianae*, vol. 2, p. 28-29.)

44150. PYRUS USSURIENSIS Maxim. Malaceæ. Pear.

"(No. 2354a. Malanyu, Chihli Province, China, December 7, 1916.) *Ta tzai hsiang li*, meaning 'Tartar fragrant pear.' A small variety of Chinese pear, of globose form, having a persistent calyx and a short peduncle; color greenish; flesh of aromatic, pleasant tart flavor becoming melting in December. This pear possibly may prove to be immune to pear-blight." (Meyer.)

44145 to 44151—Continued.**44151. PYRUS USSURIENSIS Maxim. Malaceæ.****Pear.**

"(No. 2355a. Malanyu, Chihli Province, China, December 7, 1916.) *Suan li*, meaning 'sour pear.' A medium-sized Chinese pear of globose form and of green color. Calyx persistent, length of peduncle varies considerably in different specimens. Flesh somewhat gritty and quite sour. This pear can not be eaten raw except when it has been once frozen, after which it becomes melting. By cooking them, however, a sour sauce can be obtained, which missionaries find acceptable as a substitute for sour apple sauce. Possibly this pear also may be found to be resistant to pear-blight." (*Meyer.*)

44152 to 44156. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Bridgetown, Barbados, British West Indies. Seeds presented by Mr. John R. Bovell, Superintendent of Agriculture. Received February 17, 1917.

44152. "B. H. 10 (12). One of the best, if not the best, of all the sugar-cane seedlings I have as yet grown. The average sucrose content of this cane for three years was 2.33 pounds per gallon." (*Bovell.*)

44153. "Ba. 6032."**44155.** "B-7169."**44154.** "Ba. 7924."**44156.** "B-6308."**44157 to 44162. SACCHARUM OFFICINARUM L. Poaceæ.****Sugar cane.**

From Bridgetown, Barbados, British West Indies. Cuttings presented by Mr. John R. Bovell, Superintendent of Agriculture. Received February 17, 1917.

44157. "B-6450."**44158.** "B-7169."**44159.** "B. H. 10 (12)." See S. P. I. No. 44152.**44160.** "Ba. 2471."**44161.** "Ba. 6032." See S. P. I. No. 44153.**44162.** "Ba. 7924." See S. P. I. No. 44154.**44163 to 44174.**

From China. Cuttings collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 9, 1917.

44163. PYRUS USSURIENSIS Maxim. Malaceæ.**Pear.**

"(No. 1265. Maoshan, near Malanyu, Chihli Province, December 8, 1916.)"

See S. P. I. No. 44151 for description.

44164 to 44168. PYRUS LINDLEYI Rehder. Malaceæ.**Pear.**

(*P. sinensis* Lindl.)

44164. "(No. 1266. Maoshan, near Malanyu, Chihli Province, December 8, 1916.)"

See S. P. I. No. 44146 for description. Seeds were received under No. 127b [S. P. I. No. 44146].

44163 to 44174—Continued.

44165. "(No. 1267. Maoshan, near Malanyu, Chihli Province, December 8, 1916.) *Fo t'ien hsi li*, meaning 'Emperor's beloved pear.' A medium-sized pear of somewhat compressed shape, yellow at the base and russet-brown toward the peduncle, calyx deciduous, peduncle medium long, flesh hard, but juicy and sweet. A good keeper and shipper. Of value in breeding experiments." (*Meyer.*)

44166. "(No. 1268. Maoshan, near Malanyu, Chihli Province, December 8, 1916.) *Ma li*, meaning 'dotted pear.' A medium large pear of waxy yellow color, with little dots scattered over the skin, especially near the peduncle. Flesh hard, sweet, and a trifle coarse; calyx deciduous. Of value in breeding experiments." (*Meyer.*)

44167. "(No. 1269. Maoshan, near Malanyu, Chihli Province, December 8, 1916.) *Chin hsing mi li*, meaning 'golden star honey pear.' A rather small pear, of canary-yellow color; flesh hard, but juicy and sweet; a good keeper. Some specimens have well-developed persistent calyxes, while in others they are absent; peduncles long. Of value in breeding experiments." (*Meyer.*)

44168. "(No. 1270. Maoshan, near Malanyu, Chihli Province, December 8, 1916.) *Tz'ü li*, meaning 'pointed pear.' An interesting pear, of medium-large size and a tublike shape; color yellow with rosy red blush; meat firm, juicy, sweet, and of good flavor; a good keeper and of very attractive appearance. Of value in breeding experiments." (*Meyer.*)

44169. *PYRUS USSURIENSIS* Maxim. Malaceæ.

Pear.

"(No. 1272. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916.) *Ta suan li*, meaning 'big sour pear.' An improved form of sour pear, being larger and juicier than No. 2355a [S. P. I. No. 44151]. Otherwise the same remarks apply to it." (*Meyer.*)

44170 to 44174. *PYRUS LINDLEYI* Rehder. Malaceæ.
(*P. sinensis* Lindl.)

Pear.

44170. "(No. 1273. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916). *Ts'ü li*, meaning 'pointed pear.'"

See S. P. I. No. 44168 for description.

44171. "(No. 1274. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916.) *Ê li*, meaning 'goose pear.' An elongated, yellow pear, ripening in September and not possessing keeping qualities. Of value in breeding experiments." (*Meyer.*)

44172. "(No. 1276. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916.) *P'in ti ch'iu pai li*, meaning 'applelike autumn white pear.' A variety of pear said to be flat, apple shaped, with a broad base; of yellow color. Possesses keeping qualities." (*Meyer.*)

44173. "(No. 1277. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916.) *Chien ti ch'iu pai li*, meaning 'pointed-base autumn white pear.' A variety of pear said to be like No. 1276 [S. P. I. No. 44172], but having a tapering base." (*Meyer.*)

44174. "(No. 1278. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916.)"

See S. P. I. No. 44167 for description.

44175 and 44176.

From China. Roots collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 9, 1917.

44175. *IRIS DICHOTOMA* Pall. Iridaceæ.

"(No. 1280. Near Malanyu, Chihli Province, November 24, 1916.) An iris found amidst stony débris on a hillside; apparently of very low growth." (Meyer.)

44176. *PYRUS USSURIENSIS* Maxim. Malaceæ.

Pear.

"(No. 1281. Shinglungshan, Chihli Province, December 3 and 4, 1916.) A variety of pear, small in size, flattened, apple shaped, of russet-yellow color, occasionally with a slight blush covered with many small dots. Calyx persistent, peduncle short. Becomes soft in early winter and has a very pleasant tart flavor." (Meyer.)

44177. *AMYGDALUS NANA* × *PERSICA*. Amygdalaceæ.

Hybrid peach.

From Excelsior, Minn. Cuttings presented by Mr. Charles Haralson, superintendent, Fruit Breeding Farm. Received February 23, 1917.

"A hybrid between *Amygdalus nana* and the Bokhara No. 3 peach. This hybrid grows to about 8 feet on *Prunus americana* stock, is perfectly hardy, and is the best bloomer in the spring of all the stone fruits. The tree produced an abundance of pink blossoms, larger than *Amygdalus nana*, but has never borne any fruit. The foliage is glossy dark green and stays on until the frost gets it in the fall." (Haralson.)

44178 to 44180.

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens. Received February 14, 1917.

44178. *AMARANTHUS PANICULATUS* L. Amaranthaceæ.

Amaranth.

Seeds secured from the Director of Agriculture, Kashmir.

A tall, handsome plant, 4 to 6 feet high, cultivated in eastern and western Asia and Africa. The lance-elliptic leaves are 2 to 6 inches long, and the numerous flowers are borne in dense red or gold-colored spikes. The subglobose seeds are white, red, or black, and because of their farinaceous nature form the staple food of the poorer classes of the hill tribes in many parts of India, where the plant is known as *rājgira*. (Adapted from Cooke, *Flora of the Presidency of Bombay*, vol. 2, p. 489.)

44179. *MYRICARIA GERMANICA* (L.) Desv. Tamaricaceæ.

A shrub, 6 to 8 feet high, related to *Tamarix*, found throughout most parts of Europe and the Himalayas. The flowers are pink and are borne in spikes. (Adapted from Lindley, *Treasury of Botany*, vol. 2, p. 770.) See also S. P. I. No. 39630 for further description.

44180. *TRACHYCARPUS TAKIL* Beccari. Phœnicaceæ.

Palm.

"A further supply that I have just received from the original habitat." (Hartless.)

"A palm from Mount Takil, Himalaya, closely related to *Trachycarpus martiana*." (Note of A. C. Hartless, February 1, 1916.)

See S. P. I. No. 41871 for previous introduction.

44181 to 44183.

From the Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Lamas Experiment Station, through Mr. Adn. Hernandez, director, Bureau of Agriculture, Manila. Received January 23, 1917.

44181. CALAMUS sp. Phœnicaceæ.**Rattan.**

"Seeds of the *litoco*, received from Kiangnan, northern Luzon. Fruits in branching racemes, 15 to occasionally more than 30 on a branch, sessile; 20 to sometimes exceeding 25 mm. in diameter, averaging 7 grams in weight, somewhat irregularly roundish, apex a black bony projection; the skin consists of a thin scaly shell that peels off the flesh like an egg-shell and is rather ornamental. As stated, the flesh separates perfectly from the skin and also divides into three segments, two of which are usually seedless; sometimes there are no seeds in the fruit. The flesh is light brown, subacid, with a very sprightly, pleasant flavor, somewhat astringent. In flavor the fruit resembles the lanzon more than any other that I have eaten, but is somewhat more tart. The seed is small and free from the pulp. The fruit is a good keeper, and in its native state undoubtedly is one of the best small fruits that I have ever come across. The *litoco* grows at an elevation of about 700 or more meters, where the rainfall is rather evenly distributed." (Wester.)

44182. CECROPIA PALMATA Willd. Moraceæ.**Trumpet tree.**

A West Indian tree up to 50 feet in height. At the top of the long, thin, weak trunk are a few horizontal or deflexed awkward branches bearing large palmate leaves divided like thumbs, with white hairy lower surfaces. The branches and trunk are hollow, with partitions at the nodes, and ants often make their homes in them. The juice is milky, the flowers are very small, and the fruits are small 1-seeded nuts. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 2, p. 697.)

44183. GENIPA AMERICANA L. Rubiaceæ.**Genipa.**

See S. P. I. Nos. 37833 and 44090 for further description.

44184 to 44186. SOLANUM spp. Solanaceæ.**Wild potato.**

From Lima, Peru. Tubers presented by the director, Ministerio de Fomento, Estacion Central Agronomica. Received February 23, 1917.

44184. SOLANUM IMMITE Dunal.

"Tubers of three plants of *Solanum immite* obtained from seeds in 1916."

44185. SOLANUM MAGLIA Schlecht.

A nearly glabrous wild potato, native of Chile, about 2 feet high, with angled, winged stems, compound light-green leaves 4 to 8 inches long, compound cymes of white flowers 1 inch wide, and subglobose or oblong tubers up to 1½ inches long, with smooth, reddish brown surfaces. When boiled the tubers shrink and become watery and insipid. (Adapted from *Curtis's Botanical Magazine*, pl. 6756.)

44186. SOLANUM sp.

"Harvested in Amancaes in October, 1916."

Received as *Solanum tuberosum sylvestre*; probably a wild species; to be grown for identification.

44187. DIOSPYROS EBENASTER Retz. Diospyraceæ. Black sapote.

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder. Received February 26, 1917.

See S. P. I. No. 44130 for description.

44188 to 44192.

From Santa Cruz, Argentina. Presented by Mrs. Helen E. Reynard, Hill-side, Newark, England, through Mr. G. M. Hitch, American consul, Nottingham, England. Received February 19, 1917.

44188. CROTALARIA sp. Fabaceæ.

"Seeds of a close-growing plant with pea-shaped flowers, brownish yellow in color, sweet smelling." (*Reynard.*)

44189. OENOTHERA ODORATA Jacq. Onagraceæ. Evening primrose.

A suffrutescent Chilean plant with attractive yellow flowers which turn purplish before falling.

44190. VICIA sp. Fabaceæ. Vetch.

"Seeds of a mauve-blue vetch." (*Reynard.*)

44191. ASTER sp. Asteraceæ.

"Gentian-blue prickly flowers; close-growing plants in clumps on stony soil." (*Reynard.*)

44192. PODOCOMA sp. Asteraceæ.

"A bush with yellow flowers." (*Reynard.*)

44193. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.
(*Sechium edule* Swartz.)

From St. Lucia, British West Indies. Presented by the Agricultural Superintendent at the request of Hon. Francis Watts, Commissioner of Agriculture for the West Indies. Received February 27, 1917.

"*Christophine*; green variety. The green and white varieties appear to be the only ones known in these islands." (*Watts.*)

44194. INODES EXUL O. F. Cook. Phœnicaceæ. Palmetto.

From Victoria, Tex. Presented by Mr. J. R. Fleming. Received February 17, 1917.

A large palmetto, cultivated in Texas, with deep-green foliage, solitary fruits, and large seeds not wrinkled above. (Adapted from *O. F. Cook, Bureau of Plant Industry Circular 113, pp. 11-14.*)

See also S. P. I. No. 35116 for further description.

44195. CARICA PAPAYA L. Papayaceæ. Papaya.

From Fort Myers, Fla. Presented by Mr. Hans Zeman. Received February 27, 1917.

"Seeds from a 10-pound fruit." (*Zeman.*)

44196. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.
(*Sechium edule* Swartz.)

From Cairo, Egypt. Presented by the director, Horticultural Division, Ministry of Agriculture, Gizeh Branch. Received February 28, 1917.

44197 to 44200.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Calif., February 21, 1917.

44197 and 44198. *CASTANEA MOLLISSIMA* Blume. Fagaceæ. Chestnut.

44197. "(No. 2324a. Peking, China, November 10, 1916.) A good quality of Chinese chestnuts, said to come from the Pangshan district to the northeast of Peking. Dark-colored nuts. Price, 7 cents (Mex.) per pound." (*Meyer.*)

44198. "(No. 2325a. Peking, China, November 10, 1916.) Chinese chestnuts of good quality, said to come from the Pangshan district to the northeast of Peking. Light-colored nuts. Price, 6 to 8 cents (Mex.) per pound." (*Meyer.*)

44199 and 44200. *JUGLANS REGIA* L. Juglandaceæ. English walnut.

44199. "(No. 2326a. Peking, China, November 10, 1916.) Chinese walnuts, large size, said to come from the mountains west of Peking. Price, 11 cents (Mex.) per catty. Chinese walnuts seem especially adapted to semiarid regions with warm summers and dry, cold winters." (*Meyer.*)

44200. "(No. 2327a. Peking, China, November 10, 1916.) Chinese walnuts, medium size, said to come from the mountains west of Peking. Price, 9 cents (Mex.) per catty." (*Meyer.*)

44201. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

From Ceiba, Honduras. Cuttings presented by Mr. Francis J. Dyer, American consul. Received March 7, 1917.

"This tree grows on the property of Mr. Jos. Taranto, in the business quarter of La Ceiba. It is said to produce the best fruit known locally, and it certainly is better than any others I have seen in the local markets." (*Dyer.*)

44202. *MAMMEA AMERICANA* L. Clusiaceæ.

Mamey.

From Mount Coffee, Liberia. Presented by Mr. Henry O. Stewart. Received February 23, 1917.

A tree 40 to 50 feet high, native of tropical America and the West Indies, with large, leathery, shining leaves and white, scented flowers. The nearly spherical fruit is 3 to 5 inches in diameter, with a thick, barky skin and sweetish orange-colored pulp, which is eaten raw or stewed or preserved with sugar. The small flowers are sometimes distilled, the product thus obtained being used in flavoring liquors. Propagation is by seed. (Adapted from *Macmillan, Handbook of Tropical Gardening*, p. 169.)

44203 to 44238.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 9, 1917.

44203. *ZIZIPHUS JUJUBA* Mill. Rhamnaceæ.

Jujube.

(*Z. sativa* Gaertn.)

"(No. 2330a. Peking, China, December 16, 1916.) A small quantity of cleaned jujube stones, obtained mostly from large fruits. To be sown in California and in Texas to obtain new types." (*Meyer.*)

44203 to 44238—Continued.

44204. *ZEA MAYS* L. Poaceæ.

Corn.

"(No. 2332a. Malanyu, Chihli Province, China, November 25, 1916.) *Yü mi*, meaning 'imperial rice.' A large-grained yellow flint corn, cultivated on rich bottom lands in the mountains." (Meyer.)

44205. *PERILLA FRUTESCENS* (L.) Britton. Menthaceæ.(*P. ocymoides* L.)

"(No. 2333a. Malanyu, Chihli Province, China, November 25, 1916.) *Su tsü*. An odoriferous annual, the seeds of which contain a great percentage of oil which is used in waterproofing paper and cloth. They are also much fed to song birds in winter. The young tops are employed in giving flavor to certain pickles." (Meyer.)

44206. *CANNABIS SATIVA* L. Moraceæ.

Hemp.

"(No. 2334a. Malanyu, Chihli Province, China, November 25, 1916.) *Sheng ma*, meaning 'thread hemp.' A variety of hemp, producing very strong fiber of medium length. Thrives especially well on lands recently cleared of brush or timber." (Meyer.)

44207. *ABUTILON THEOPHRASTI* Medic. Malvaceæ.

Indian mallow.

(*A. avicennae* Gaertn.)

"(No. 2335a. Malanyu, Chihli Province, China, November 27, 1916.) *Ch'ing ma*, meaning 'green hemp.' A variety of Abutilon hemp, producing a very much stronger fiber than the common sort. Does especially well on rich bottom lands." (Meyer.)

44208. *FAGOPYRUM VULGARE* Hill. Polygonaceæ.

Buckwheat.

(*F. esculentum* Moench.)

"(No. 2336a. Malanyu, Chihli Province, China, November 25, 1916.) *Ch'iao mai*, meaning 'triangular wheat.' Chinese buckwheat, grown as a late crop on poor lands and on mountain slopes. From the flour a very thin and brittle vermicelli is manufactured, from which a meal can be prepared within a few minutes." (Meyer.)

44209 to 44214. *SOJA MAX* (L.) Piper. Fabaceæ.

Soy bean.

(*Glycine hispida* Maxim.)

"From Malanyu, Chihli Province, China, November 25, 1916."

44209. "(No. 2337a.) *Huang tou*, meaning 'yellow bean.' An early-maturing medium-sized yellow variety of soy bean, primarily used to make bean curd." (Meyer.)

44210. "(No. 2338a.) *Huang tou*, meaning 'yellow bean.' A late-maturing medium-sized yellow variety used for oil production and in making bean curd and sauce." (Meyer.)

44211. "(No. 2339a.) *Ta ch'ing tou*, meaning 'large green bean.' A pale-green variety, used in bean curd and sauce manufacture." (Meyer.)

44212. "(No. 2340a.) *Ch'ing tou*, meaning 'green bean.' A green variety, often used as an appetizer with meals when slightly sprouted and salted or when fried and salted." (Meyer.)

44213. "(No. 2341a.) *Ch'ing tou*, meaning 'green bean.' A green variety, slightly different from No. 2340a [S. P. I. No. 44212]. Used as an appetizer with meals when slightly sprouted and salted or when fried and salted." (Meyer.)

44203 to 44238—Continued.

44214. "(No. 2342a.) *Hei tou*, meaning 'green bean.' A small, shining, black soy bean, generally used, when boiled, as a food for hard-working horses, mules, donkeys, and oxen, mixed with chopped straw and kaoliang grains." (*Meyer.*)

44215 to 44217. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

"From Malanyu, Chihli Province, China, November 25, 1916. *Yün tou*, meaning 'fragrant bean.' Garden beans eaten mostly when green, as a vegetable." (*Meyer.*)

Selections made from No. 2343a.

44215. Bluish black.

44216. Pure white mixed with ivory white.

44217. Maroon mixed with gray.

44218 to 44221. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

"From Malanyu, Chihli Province, China, November 25, 1916."

44218. "(No. 2344a.) *No ling tan Chiang tou*, meaning 'wren's egg precious bean.' A speckled variety of cowpea with white top. Cowpeas are in great favor with the Chinese as a human food; they are eaten boiled with rice, stewed in meat dishes, and cooked in soups; they are believed to promote speedy excretions of waste in the body." (*Meyer.*)

44219. "(No. 2345a.) *Hung Chiang tou*, meaning 'red precious bean.' A small brown variety of cowpea." (*Meyer.*)

44220. "(No. 2346a.) *Hei yen pai Chiang tou*, meaning 'black-eyed white precious bean.' A small, wrinkled, white cowpea, with black hilum." (*Meyer.*)

44221. "(No. 2347a.) *Hung yen pai Chiang tou*, meaning 'red-eyed white precious bean.' A small, wrinkled, white cowpea with reddish hilum." (*Meyer.*)

"A brown-eyed variety of cowpea, quite similar to S. P. I. No. 34103, which seems fairly promising as a table variety." (*C. V. Piper.*)

44222 to 44226. *PHASEOLUS AUREUS* Roxb. Fabaceæ. Mung bean.

"From Malanyu, Chihli Province, China, November 25, 1916."

Selected from No. 2347a, which was a mixed lot of seeds.

44222. "Apparently ordinary green mung. Seed much like S. P. I. No. 17289, which was grown from seed received from China." (*C. V. Piper.*)

44223. "Green mung. Seeds rather shiny, much the same as S. P. I. No. 28053 from Manchuria and F. C. I. 01896, a green mung selected from No. 31806, which is a field pea received from Chinese Turkestan." (*C. V. Piper.*)

44224. "Brown mung, much like S. P. I. No. 13395. *Newman* bean." (*C. V. Piper.*)

44225. "Seeds green to brownish, densely speckled with black, giving a black appearance to the seed. We have never had seed exactly like this, but S. P. I. No. 16323 is somewhat similar." (*C. V. Piper.*)

44226. "Apparently the same as S. P. I. No. 44225, but seeds dull, the dullness due to crenulation." (*C. V. Piper.*)

44203 to 44238—Continued.

44227 and 44228. *PHASEOLUS ANGULARIS* (Willd.) W. F. Wight. Fabaceæ. **Adsuki bean.**

"From Malanyu, Chihli Province, China, November 25, 1916."

Selected from No. 2347a.

44227. "An adsuki bean, greenish buff to brown, speckled and mottled with black, similar to S. P. I. No. 25141; received from Soochow, China." (*C. V. Piper.*)

44228. "Seed greenish, straw or buff color, similar to S. P. I. No. 19185; received from China." (*C. V. Piper.*)

44229 and 44230. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. **Cowpea.**

"From Malanyu, Chihli Province, China, November 25, 1916."

44229. Selected from 2347a. "Red and white variety. Seed appears identical with that of S. P. I. No. 36078." (*C. V. Piper.*)

44230. "No. 2348a. *Hua yao chaing tou*, meaning 'flower kidney precious bean.' A large variety of cowpea, of reddish brown color with white tip." (*C. V. Piper.*)

44231. *PISUM SATIVUM* L. Fabaceæ. **Pea.**

"(No. 2349a. Malanyu, Chihli Province, China, November 25, 1916.) *Wan tou*, meaning 'ten thousand beans.' A small white garden pea, cultivated for human consumption. In winter these peas are often forced in hot, dark, moist rooms and the sprouts eaten scalded." (*Meyer.*)

44232. *PHASEOLUS ANGULARIS* (Willd.) W. F. Wight. Fabaceæ.

Adsuki bean.

"(No. 2350a. Malanyu, Chihli Province, China, November 25, 1916.) *Hei hsiao tou*, meaning 'black small bean.' An adsuki bean of marble-blackish color, used mostly to produce first quality bean sprouts." (*Meyer.*)

44233. *JUGLANS MANDSHURICA* Maxim. Juglandaceæ.

Manchurian walnut.

"(No. 2351a. Shinglungshan, Chihli Province, China, December 3, 1916.) *Shan ho t'ao*, meaning 'mountain or wild walnut.' A wild walnut, occurring in Manchuria and northern China, growing into a stately tree. The nuts are small and contain but little meat, but they are eagerly eaten by the people. The young foliage is very sensitive to frosts and the trees can be grown successfully only in localities where late frosts are of rare occurrence. Of value as a hardy shade tree; possibly also as a stock for Persian walnuts in cold localities." (*Meyer.*)

44234. *JUNIPERUS CHINENSIS* L. Pinaceæ.

Juniper.

"(No. 2352a. Peking, China, December 27, 1916.) *Pai shu*. Berries of the North Chinese juniper, a hardy, drought and alkali resistant evergreen tree, living to be many centuries old. Especially suited for dry climates with winters not too severe." (*Meyer.*)

44235 to 44237. *PYRUS USSURIENSIS* Maxim. Malaceæ.

Pear.

44235. "(No. 2356a. Tsunhwachow, Chihli Province, China, December 10, 1916.) *Kuan li*, meaning 'bushy pear.' Seeds obtained from fresh fruits. A small pear, of greenish rusty color, of flattened apple shape; calyx persistent, peduncle short. Flesh becoming melting in early winter, of pleasant tart flavor, and possessing aroma. Comes close to the *Pa li hsiang li* and the *Ta tzü hsiang li*

44203 to 44238—Continued.

[S. P. I. No. 44150] Might possibly prove to be immune to fire-blight." (*Meyer.*)

44236. "(No. 2357a. Shinglungshan, Chihli Province, China, December 3 and 4, 1916.) Collected from wild trees which often reach great size, especially in the rich valleys where the trees are now being destroyed to make room for settlers. The bark is of a blackish gray color and characteristically grooved. Branches on young trees are often quite spiny. The fruits are said to ripen early in September, and as there are many rodents about they are soon carried away. To obtain a sufficient supply, one has to be on the spot when these fruits fall." (*Meyer.*)

44237. "(No. 2358a. Chiupatzeling, Shinglungshan district, Chihli Province, China. December 5, 1916.) Collected from wild trees. See Nos. 2356a and 2357a [S. P. I. Nos. 44235 and 44236] for further description." (*Meyer.*)

44238. *QUERCUS* spp. Fagaceæ.

"(No. 2359a. Shinglungshan, Chihli Province, China, December 3, 1916.) Various species of oaks mixed, among which species possibly exist that have not been introduced as yet to western horticulture." (*Meyer.*)

44239. GARCINIA MULTIFLORA Champ. Clusiaceæ.

From Kiayingchow, via Swatow, China. Presented by Miss Louise Campbell. Received March 7, 1917.

A shrub, native of southern China, with ovate leaves 3 to 3½ inches long, and perfect flowers in short terminal corymbs, appearing in the heat of summer. (Adapted from *Bentham, Flora Hongkongensis*, p. 25.)

"In a conversation with me on January 8, 1913, Mr. George Campbell, of Kiayingchow, described this fruit and the circumstances connected with its discovery by him as follows:

"In October I was at Pine Mouth. It was the time of the autumn festival and there was a large crowd there. I wandered down a side street and saw a Chinese woman sitting down with a basket before her containing a fruit I had never seen before. It looked something like a guava, but it was symmetrical, round, and green in color, and I was sure it was not a guava. I got two or three of them, asked the woman about them, but all she knew was that they grew wild on the mountains. I took them to the boat and opened them. They were the size of a walnut with the husk on and made me think of a walnut. Upon opening one of the fruits, there was a layer as thick as your finger clear around, which could not be eaten—bitter pulp. Inside there was a nucleus of whitish, almost transparent flesh. There were three perfect seeds in the fruit, I think smaller than a persimmon seed. The inner pulp was very sweet, and the sweetness was that of a mangosteen, very pleasant. The Chinese have a name for this fruit, but it is entirely inappropriate. This fall I had it in mind, and while at Pine Mouth, inquired about the fruit. The people said there was no such thing, but I satisfied myself that some of them did know of the plant. I left some money with a doctor in Pine Mouth, Dr. Chang, and asked him to get some of the fruits for me, if possible, but shortly after this I was obliged to come to America with my wife, so have heard nothing of it. I did, however, ask the doctor to get the fruits, if possible, and send them to

my daughter at Kiaying. I think that very few of these fruits come to the market and that there are very few trees, but I think by searching one could find a tree of the fruit.'

"Introduced as a possible stock for the less-hardy mangosteen. This shrub has stood several degrees of frost in the mountains of northern Kwangtung, where it is native." (*Fairchild.*)

44240. *BAMBOS TULDA* Roxb. Poaceæ.

Bamboo.

From Dehra Dun, India. Presented by Mr. R. S. Hole, forest botanist, Forest Research Institute and College, at the request of the economic botanist, Poona. Numbered March 14, 1917.

An evergreen or deciduous tree bamboo, common in Bengal, India, with green or gray-green culms 20 to 70 feet high and 2 to 4 inches in diameter, and branches from nearly all the nodes. (Adapted from *J. S. Gamble, Bambuseæ of British India*, p. 30.)

This bamboo is said to furnish the so-called "Calcutta cane," used for the finest quality of split-bamboo fishing rods.

See S. P. I. No. 40886 for further description.

For an illustration of a clumb of Calcutta bamboos in Panama, see Plate V.

44241 and 44242.

From Augusta, Ga. Presented by Mr. R. C. Berckmans. Received February 26, 1917.

44241. *CUDRANIA TRICUSPIDATA* (Carr.) Bureau. Moraceæ. **Cudrania.** (*Maclura tricuspidata* Carr.)

"This tree is very easily propagated from suckers. The tree that we have in our nursery is about 12 feet high and about 6 feet broad. It would have been considerably larger than this but for the fact that some four years ago we headed it back to about 3½ feet from the ground. This tree had at least 1½ bushels of fruit which had been matured from the middle of August up to the present time (November), and the specimens that it bore would run into the thousands. It is most prolific, and the fruit matures on the limbs like bunches of onions." (*Berckmans.*)

A compact, somewhat spiny, Chinese bush, with light-green leaves varying from three lobed to ovate in outline, which are used for feeding silkworms. The silk produced by silkworms fed on these leaves is employed in making lute strings, which give clearer tones than those made from ordinary silk. The tree is said to afford a reddish yellow dye called the *ché* yellow, used in dyeing the imperial garments. (Adapted from *Gardeners' Chronicle*, vol. 24, p. 410.)

44242. *PHELLODENDRON SACHALINENSE* Sarg. Rutaceæ.

A rapid-growing tree, native of Saghalin, Chosen, western China, and northern Japan. It ascends to a height of 50 feet, forming a broad crown, and the dark-brown thin bark is not corky. The dull-green compound leaves are 3 to 5 inches long, and the black fruits, one-third of an inch in diameter, occur in broad panicles. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2578.)



A CLUMP OF THE TULDA BAMBOO IN PANAMA (BAMBOS TULDA, S. P. I. No. 44240).

A Wardian case filled with plants of this species of bamboo was sent to Washington in the spring of 1907 from Sibpur, near Calcutta, India, by Maj. A. T. Gage, superintendent of the Royal Botanic Garden there. Two years later plants were sent to Panama and central Florida, and some of these have grown into beautiful clumps: there is one at Mr. Nehrling's place near Gotha, Fla., and this clump in the Canal Zone. Later, thousands of seedlings from imported seeds were distributed. This species is ranked as one of the most useful plants of Bengal. Its culms are imported to America and used in the making of split bamboo fishing rods. (Photographed at Culebra, Canal Zone, 1917.)



THE NIPA PALM IN FRUIT (*NYPA FRUTICANS*, S. P. I. NO. 44405).

Along the low lands near the coast of the Malay Archipelago this stemless palm, covering vast areas, raises its superb long leaves, like giant fern fronds, above the swamps. It deserves to be naturalized wherever it will grow, not only for its beauty, but for its possibilities as an alcohol-producing plant and for its leaves, from which beautiful floor mats are made. (Photographed by P. L. Bryant, of the Far Eastern Review, August, 1915; P25002FS.)

44243. INODES EXUL O. F. Cook. Phœnicaceæ. Palmetto.

From Victoria, Tex. Presented by Mrs. Martin O'Connor. Received March 9, 1917.

A large palmetto, cultivated in Texas, with deep-green foliage, solitary fruits, and large seeds not wrinkled above. (Adapted from *O. F. Cook, Bureau of Plant Industry Circular 113, pp. 11-14.*)

"These have been through several freezes." (*O'Connor.*)

See also S. P. I. No. 35116 for further description.

44244. ANNONA SQUAMOSA L. Annonaceæ. Sugar-apple.

From Dindigul, South India. Presented by Rev. Willis P. Elwood, American Madura Mission. Received March 9, 1917.

"Seeds of sugar or custard-apple. Some of it I saved myself, but a greater part came from other places where the fruit was said to be superior." (*Elwood.*)

44245. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. Tomato.

From Cristobal, Canal Zone. Presented by Mr. O. W. Barrett. Received March 14, 1917.

"Seeds from ripe fruits of the so-called bush (i. e., jungle) variety which bears more or less wrinkled berries of 15 to 25 mm. in diameter; the plant is very loosely branched, 50 to 75 cm. or more high, and it appears to resist the *Bacillus solanacearum* very well." (*Barrett.*)

44246. PYRUS USSURIENSIS Maxim. Malaceæ. Pear.

From Charles City, Iowa. Scions presented by Mr. Charles G. Patten. Received March 6, 1917.

"In Grundy Center, Iowa, there is a pear tree growing which endured the extremely cold winters of 1883, 1884, and 1885. This pear is owned by Mr. O. A. Bardhall, a tailor, and was imported from China as a Chinese sand pear by John S. Collins & Sons, of New Jersey, and was supposed by them to bear pears nearly the size of Flemish Beauty, but only of cooking quality. The extreme hardiness of the tree appealed to Mr. Charles G. Patten, of Charles City, Iowa, who planted one in his orchard in 1885, and the following year planted two in an isolated orchard on his farm. The second year after that the tree bore fruit, but on account of its early blooming and consequent lack of pollination bore only a very scanty number of very small, green-colored, hard pears, from which but few seeds were saved. There are in Charles City some 200 seedling pear trees, products of crosses of the Longworth, Seckel, and Chinese sand varieties." (Adapted from *Charles G. Patten, in Report of the Iowa State Horticultural Society for the Year 1912, p. 162.*)

44247 to 44249.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received March 6, 1917.

44247. ALLIUM FISTULOSUM L. Liliaceæ. Leek.

"(No. 137b. Ansuhsien, Chihli Province, China, January 18, 1917.) *Ta t'ou ts'ung*, meaning 'large-headed leek.' One specimen of a peculiar, short variety of winter leek." (*Meyer.*)

44247 to 44249—Continued.**44248. ALLIUM SATIVUM L. Liliaceæ.****Garlic.**

"(No. 138b. Ansuhsien, Chihli Province, China, January 18, 1917.) *Suan*. Bulbs of the first-quality Chinese garlic, extensively used by the people raw, boiled, and pickled as health promoters. They are said to prevent ptomaine poisoning through the action of the strong antiseptic oil they contain. These bulbs sell locally at two for 1 cent (Mex.)." (*Meyer*.)

44249. CHAENOMELES LAGENARIA CATHAYENSIS (Hemsl.) Rehder. Mala-
(*Cydonia cathayensis* Hemsl.) [ceæ. **Chinese quince.**

"(No. 139b. Peking, China, January 27, 1917.) *Mu kwa*, meaning 'wooden gourd,' the shape suggesting to the Chinese a gourd. The Chinese quince is much used in winter as a room perfumer by the better class of Chinese. These fruits are said to have come from Anhwei Province. Plants raised from the seeds should be tested as a stock for pears and loquats. Experiments might be made also concerning its susceptibility to blight." (*Meyer*.)

44250. MYRIANTHUS ARBOREUS Beauv. Moraceæ.

From Loanda, Angola, Africa. Presented by Mr. J. Gossweiler. Received March 6, 1917.

A tree, native of tropical Africa, with large entire or three to five lobed leaves with prominent stipules. The male flowers are borne on thick, branching receptacles, and the female flowers appear in solitary headlike inflorescences. The fleshy fruits are edible. (Adapted from *A. Engler, Die Pflanzenwelt Ost-Africas, part C, p. 162.*)

44251 and 44252.

From Bogota, Colombia. Presented by Mr. George E. Child. Received March 12, 1917.

44251. ANNONA CHERIMOLA Mill. Annonaceæ.**Cherimoya.**

"It is always worth while to test new strains of the cherimoya, particularly when they are obtained from high altitudes, as this one appears to be. The aim of subtropical horticulturists at the present time is to secure a variety which will be reasonably hardy and prolific in bearing, with a fruit of good quality. To this end we need to plant seed from all parts of tropical America where the cherimoya is grown." (*Popenoe*.)

44252. PERSEA AMERICANA Mill. Lauraceæ.
(*P. gratissima* Gaertn. f.)

Avocado.

"The avocados of Colombia are scarcely known in the United States. A few fruits of the West Indian race have reached the markets of New York from Colombian ports, but we know very little regarding the races or varieties of the highlands. Some very remarkable young seedlings have been grown in Florida from seed of Colombian origin. It is possible that we shall obtain from that country new races or varieties of considerable value." (*Popenoe*.)

44253 to 44266. AMYGDALUS spp. Amygdalaceæ.**Peach.**

From China. Procured from Mr. Thomas Sammons, American consul general, Shanghai. Received March 12, 1917.

"Seeds procured in the region of Kiangyin, Kiangsu Province, by the agent of the Rev. Lacy L. Little. The following directions for the planting and

care of peach trees were furnished by a native peach grower who is thoroughly conversant with the native methods of peach culture.

"The seeds must first be soaked in water and kept therein until the water becomes stale. They should then be taken out and planted, covering them with a thin coating of earth. They should be kept moist with a mixture of wine dregs and water until they sprout. Should worms be discovered in the fruit, the earth should be drawn away from the tree where it emerges from the ground and an old straw sandal (one that has been worn), having been first soaked in urine, should be wrapped around the part of the tree from which the earth has been removed. After this it should be fertilized at intervals with household excrement." (*Sammons.*)

44253 to 44265. AMYGDALUS PERSICA L.

(*Prunus persica* Stokes.)

44253. "*Autumn half-pound peach.* Ripens in the autumn. Round and unusually large. Sometimes weighs more than a half pound. White, freestone. Exceedingly fine flavor. Should be carefully looked after." (*Native peach grower.*)

44254. "*Shiny gray peach.* Ripens in August. Oblong in shape; color reddish purple. Flavor sweet, with slight acid taste." (*Native peach grower.*)

44255. "*Nanking red peach.* Ripens about the middle of May. Round and pointed; color reddish white. Flavor sweet, slightly acid. Has a great reputation at Soochow, in Kiangsu Province." (*Native peach grower.*)

44256. "*Watery honey peach.* This peach was first planted in Shanghai, in the Lushang Gardens, in the Da Ts'ing dynasty, in the years known as Ien Fong and Dong Z. Although these gardens are no longer in existence, the seeds of this peach are still to be found along the Yangtse River. It has a peculiarly fine flavor." (*Native peach grower.*)

44257. "*Large fuzzy peach.* Ripens the last of August. Round in shape. Color green; has a fuzzy skin. Wait until it is fully ripe before gathering." (*Native peach grower.*)

44258. "*June red peach.* Ripens in June. Round; color whitish green; skin is unusually thick. Excellent flavor." (*Native peach grower.*)

44259. "*Early summer peach.* Ripens about the middle of July. Shaped somewhat like a pear; color reddish green, flavor sweet." (*Native peach grower.*)

44260. "*Watery white peach.* Ripens about the middle of July. Large and round, pointed somewhat like a pear; color white, surface smooth, flavor fine." (*Native peach grower.*)

44261. "*Shiny plum peach.* Ripens in July and August. Oblong in shape, color purplish green and shiny. Flavor very fine." (*Native peach grower.*)

44262. "*August white peach.* Ripens about the middle of August. Round and pointed. White with greenish tinge. Best flavor when thoroughly ripe." (*Native peach grower.*)

44253 to 44266—Continued.

44263. "*Rainy season* peach. Ripens in the latter part of May (the Chinese rainy season). Round and pointed; slightly red at the point; flavor sweet and good." (*Native peach grower.*)

44264. "*July white* peach. Ripens in the middle of July. Round and pointed; skin soft and thin. Color white with greenish tinge. Flavor delicious." (*Native peach grower.*)

44265. Mixed seed of the foregoing twelve varieties (Nos. 44253 to 44264.)

44266. *AMYGDALUS PERSICA PLATYCARPA* (Decaisne) Ricker.
(*Prunus persica platycarpa* Bailey.)

"Flat peach. Ripens about the middle of August. Round and flat; color greenish white. Fuzz fine and thick." (*Native peach grower.*)

44267 and 44268.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received March 7, 1917.

44267. *COCCOLOBIS* sp. Polygonaceæ.

A plant allied to the sea grape, or *jarra*, of the West Indies.

44268. *GUILIELMA UTILIS* Oerst. Phœnicaceæ. Pejibaya palm.
(*Bactris utilis* Benth. and Hook.)

"This palm, commonly called *pejibaya*, grows in the hot humid sections of Costa Rica, more abundantly on the Atlantic slope. The Indians have cultivated it since remote times, and it is not known in the wild state. The trunk reaches a height of 8 meters and is covered with sharp thin spines disposed in circular zones. The leaves are pinnate, dark green in color. The flowers are yellow, very much sought after by insects. They form short racemes protected by a bristled spathe. The fruits reach the size of a small peach and in the larger number of varieties are red, the other sort being yellow. The seed is inclosed in a sweet farinaceous pulp that is cooked and eaten. It has a flavor much like that of the chestnut and is a favorite food of the town people. The wood is very hard and is used by the Indians for walking sticks, arrow points, bows, pikes, and for all purposes where strength and durability are required. The name *pejibaya* is probably South American with the variations *pejiballe*, *pajibay*, *pixbae*, *pixbay*." (C. B. Doyle.)

44269 to 44272.

From Curacao, Dutch West Indies. Seeds collected by Mr. H. M. Curran. Received March 16, 1917.

44269. *CEPHALOCEREUS LANUGINOSUS* (L.) Britt. and Rose. Cactaceæ.
Cactus.

"Edible fruit. March 1, 1917." (*Curran.*)

44270. *COCCOLOBIS DIVERSIFOLIA* Jacq. Polygonaceæ.

"*Kamalia*. Edible fruit. March 6, 1917." (*Curran.*)

A West Indian tree 2 to 10 meters in height, with ovate leaves 7 to 14 cm. long, spicate inflorescences of green flowers, and ovoid, brown fruits about 1 cm. long containing round, brownish green seeds. (Adapted from Engler, *Botanische Jahrbücher*, vol. 13, p. 149, as *Coccoloba barbadensis*.)

44269 to 44272—Continued.**44271.** *Ipomoea* sp. Convolvulaceæ.

An ornamental vine allied to our morning-glory.

44272. *Sesban* sp. Fabaceæ."Perennial leguminous plant in low lands, March 6, 1917." (*Curran.*)**44273. PSYCHOTRIA BACTERIOPHILA Valet. Rubiaceæ.**From Buitenzorg, Java. Presented by the director, Jardin Botanique.
Received March 19, 1917.

See S. P. I. No. 44119 for previous introduction and description.

For notes on the interesting phenomenon of bacterial leaf nodules in Rubiaceous plants, see S. P. I. No. 44295.

44274 to 44288.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 19, 1917.

44274 and 44275. *Pyrus* spp. Maxim. Malaceæ.**Pear.****44274.** *PYRUS USSURIENSIS* Maxim."(No. 2360a. Tsunhwachow, Chihli Province, China, December 9, 1916.) *Ta suan li*, meaning 'big sour pear.'" (*Meyer.*)

Scions received under No. 1272 [S. P. I. No. 44169], which see for description.

44275. *PYRUS USSURIENSIS* Maxim."(No. 2361a. Tsunhwachow, Chihli Province, China, December 9, 1916.) *Hung hua kuan li*, meaning 'red-flowered pear.' A small variety of pear, of round, flattened shape with very long peduncle (twice the diameter of the fruit). Calyx persistent; color on top dull red, at base greenish yellow. Flesh of watery sweet taste, becoming soft later on. Probably a hybrid and possibly immune to fire-blight." (*Meyer.*)**44276.** *PYRUS*-sp."(No. 2362a. Peking, China, November 4, 1916.) *T'ou li*, meaning 'joining pear,' which name also is given to *Pyrus betulaefolia*, in which case it has reference to the fact that this last one is used extensively as a joining (i. e., grafting) stock. This number, however, is quite a different pear and may prove to be a new species. A small pear, the size of a crab apple, of russet color, with a very long peduncle and a deciduous calyx. Flesh soon becoming soft and mealy and decaying quickly." (*Meyer.*)**44277.** *PYRUS* sp."(No. 2363a. Peking, China, December 15, 1916.) *Shui pai li*, meaning 'water white pear.' A variety of Chinese pear of yellow color; medium size; of round-oval shape; peduncle medium long; calyx persistent. Meat firm and sweet, but a trifle coarse. A rare variety." (*Meyer.*)**44278.** *PYRUS USSURIENSIS* Maxim.

"(No. 2364a. Peking, China, December 19, 1916.) The well-known white pear, or 'Pai li,' which is among the pears most appreciated by foreign residents in North China. The fruits are of apple shape, of pale

44274 to 44288.—Continued.

waxy-yellow color, and the flesh of a fresh, sweet taste after they have become soft. Some of the fruits have persistent calyxes, while others have deciduous ones." (*Meyer.*)

Received as *Pyrus simonii*, which is now referred to the above species by Mr. Rehder.

44279. PYRUS LINDLEYI Rehder.

(*P. sinensis* Lindl.)

"(No. 2365a. Malanyu, Chihli Province, China, November 25, 1916.) *P'in li*, meaning 'apple pear.' A variety of pear of russet-brown color and of flat, apple shape, though some specimens are of elongated form and taper down toward the base; calyx deciduous; peduncle medium long; flesh firm and juicy, but not sweet. A long-time keeper and a good shipper; can be used by occidentals as a cooking pear." (*Meyer.*)

44280. PYRUS spp.

"(No. 2366a. North China, November and December, 1916.) Mixed varieties of cultivated pears; to be tested as regards degree of immunity to pear-blight." (*Meyer.*)

44281 to 44283. MALUS spp. Malaceæ.**44281. MALUS SPECTABILIS** (Ait.) Borkh.

Flowering crab apple.

(*Pyrus spectabilis* Ait.)

"(No. 2367a. Peking, China, November 3, 1916.) *Hai tan kuo*, meaning 'sea red fruit,' implying that the plant came to North China by the sea route, probably from central China. A flowering crab apple, resistant to the drought and alkali of North Chinese soils. The small, greenish white fruits, which are of no value, have a persistent calyx. To be sown in order to obtain new types." (*Meyer.*)

44282. MALUS sp.

Apple.

"(No. 2368a. Peking, China, December 15, 1916.) *Ch'iu kuo*, meaning 'autumn fruit.' A small Chinese apple, of very dark-red color with bluish bloom. Calyx persistent; peduncle medium long; contains but few seeds. Flesh mealy and without flavor. Withstands dry air and a fair amount of alkali in soil and water." (*Meyer.*)

44283. MALUS BACCATA (L.) Moench.

Crab apple.

(*Pyrus baccata* L.)

"(No. 2369a. Peking, China, December 15, 1916.) *Hai tan kuo*, meaning 'sea red fruit.' A medium-sized crab apple, of bright-red color and of pleasant, sour taste. Calyx deciduous; peduncle medium long. Much used in North China as a preserve. This variety seems to be able to stand considerable drought and alkali and may be of value in breeding experiments in the upper Mississippi Valley." (*Meyer.*)

44284. NICOTIANA TABACUM L. Solanaceæ.

Tobacco.

"(No. 2370a. Malanyu, Chihli Province, China, November 27, 1916.) *Yen*. A variety of tobacco considered locally to be very good. To be tested for nicotine content." (*Meyer.*)

44285. INDIGOFERA KIRILOVII Maxim. Fabaceæ.

"(No. 2371a. Shinglungshan, Chihli Province, China, December 3, 1916.) A low-growing leguminous shrub, with pretty rose-colored flowers; occurring on decomposed rocky mountain slopes, often in partial shade. Fit to be employed as a rockery shrub." (*Meyer.*)

44274 to 44288—Continued.

44286. *ULMUS PARVIFOLIA* Jacq. Ulmaceæ. Elm.

“(No. 2372a. Near Shihtaoyin, Chihli Province, China, December 1, 1916.) An autumn-flowering elm, found in a locality farther north than one generally meets with this species.” (*Meyer.*)

44287. *CHRYSANTHEMUM INDICUM* L. Asteraceæ. Chrysanthemum.

“(No. 2373a. Malanyu, Chihli Province, China, November 30, 1916.) A wild, perennial chrysanthemum, producing masses of small, golden-yellow flowers late in the fall. The plant is well worth growing on dry banks and in large rockeries; it requires partial shade to do best. Deserves to be naturalized in a locality like Colorado Springs.” (*Meyer.*)

44288. *SPODIOPOGON SIBIRICUS* Trin. Poaceæ. Grass.

“(No. 2374a. Shinglungshan, Chihli Province, China, December 3, 1916.) A perennial grass, 2 to 3 feet high, occurring on mountain slopes on decomposed porphyritic rock in partial shade. Possibly of forage value in Rocky Mountain localities.” (*Meyer.*)

44289. THUNBERGIA GIBSONI S. Moore. Acanthaceæ.

From Lawang, Java. Presented by Mr. M. Buysman. Received March 19, 1917.

An ornamental climbing shrub native to tropical East Africa. It flowers profusely, the corolla being of clear or deep-orange color and having a waxy texture. The plant is said to grow well under ordinary greenhouse conditions. (Adapted from *Gardeners' Chronicle*, May 1, 1915.)

“Seeds of a plant often discussed in the *Gardeners' Chronicle*, but never brought into commerce. It is doubtless the finest species of the genus.” (*Buysman.*)

44290. MANGIFERA CAESIA Jack. Anacardiaceæ.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received March 19, 1917.

Binjai. A large, stately tree, native of the Malay Archipelago, with alternate wedge-shaped or elliptic leathery leaves 6 to 16 inches long; stout, much-branched panicles of purplish flowers, and oblong or ovoid fruits, which are eaten by the natives but are said to be very poor. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, pp. 1894-1895.)

44291 to 44294.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received March 6, 1917.

44291. *BRASSICA PEKINENSIS* (Lour.) Gagn. Brassicaceæ. **Pai ts'ai.**

“(No. 2375a. Ansuhsien, Chihli Province, China, January 18, 1917.) *Pan ch'ing pan*, *pan pai ts'ai*, meaning ‘half green, half white pai ts'ai,’ on account of the outer leaves being green while the center is white. A fine quality of heavy winter *pai ts'ai*, coming from a locality famous for its cabbage and formerly supplying the Imperial Court at Peking. This *pai ts'ai* has a sweet, wholesome flavor, is quite juicy, but not watery, like most other varieties. After having been boiled once it can be warmed up again three successive days without losing its fine taste. The plants are transplanted three times before being put out in their permanent places. They need a rich porous soil and plenty of water while growing fast. In good seasons specimens are obtained that weigh between 30 and 40 pounds apiece.” (*Meyer.*)

44291 to 44294—Continued.

44292. *BRASSICA PEKINENSIS* (Lour.) Gagn. Brassicaceæ. **Pai ts'ai.**

"(No. 2376a. Ansuhsien, Chihli Province, China, January 18, 1917.) *Pai ts'ai*, meaning 'white vegetable.' A heavy quality of white winter *pai ts'ai*, much in demand and generally disposed of by the growers to private customers before the end of December. Needs a rich soil and no lack of moisture to become tender and sweet." (Meyer.)

44293. *RAPHANUS SATIVUS* L. Brassicaceæ. **Radish.**

"(No. 2377a. Ansuhsien, Chihli Province, China, January 18, 1917.) *Teng lung hung lo po*, meaning 'lantern red root,' referring to the resemblance of the root to a Chinese or Japanese flat lantern. A large, flat red, winter radish, said to grow as heavy as 5 catties apiece. Needs rich, well-drained soil to do well. Sow out in summer, not in spring." (Meyer.)

44294. *ALLIUM FISTULOSUM* L. Liliaceæ. **Leek.**

"(No. 2378a. Ansuhsien, Chihli Province, China, January 18, 1917.) *Ta t'ou st'ung*, meaning 'large-headed leek.' A peculiar variety of Chinese winter leek of very short growth, looking almost like a slender onion. Said to be of very good flavor; possesses also good shipping and keeping qualities. Does best in light, rich, moisture-retaining soil." (Meyer.)

44295. *PAVETTA ZIMMERMANNIANA* Valet. Rubiaceæ.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Gardens. Received March 19, 1917.

A small rubiaceous tree or shrub, with opposite, nearly elliptic leaves and clusters of small slender-tubed white flowers.

"The remarkable researches of Zimmerman and Faber detailed in the *Jahrbücher für Wissenschaftliche Botanik*, vol. 51, p. 285, 1912, and vol. 54, p. 243, 1914, make this species of unusual interest. Faber has proved that the leaves of this and of several other species of *Pavetta*, *Psychotria*, and possibly other genera of the Rubiaceæ contain colonies of a nonmotile, nitrogen-fixing bacterium which he names *Myco-bacterium rubiacearum*. The bacteria of this species almost invariably inhabit the micropyle of the young seed and when the seed germinates grow through certain stomata of the very young leaves and into the intracellular spaces formed in the leaf tissues around these stomata. Cavities are formed through the growth of the epidermal cells which later close entirely and make bacterial nodules which are deeply embedded in the leaf tissues. A single leaf may have several dozen of these symbiotic bacterial nodules.

"Faber was able, by treating the seeds with hot water and a sublimate solution, to kill the inhabiting myco-bacteria and, later, to infect part of the seedlings grown from these seeds with pure cultures of the bacterium. The artificially infected seedlings grown in soil free from combined nitrogen grew well and remained healthy for four months, whereas those not so infected turned yellowish white and died in three or four weeks. The plants from unsterilized seeds produced leaves bearing many more bacterial nodules than did those from sterilized seeds which were later artificially inoculated. In view of the fact that these rubiaceous plants with bacterial nodule-bearing leaves occur in many parts of the Tropics and that in India, at least, the value of their leaves for manure has long been recognized, and considering the value of nitro-

gen-fixing legumes as fertilizers, the suggestion of Faber that we may have in these trees and shrubs plants of positive agricultural value for the tropical planter is well worthy of consideration. The value of the mulch formed by the leaves of leguminous and other plants is keenly appreciated by the best cultivators; and it may be possible to find suitable small shrubs of *Pavetta* or other rubiaceous plants which will be worth while growing for their nitrogen-fixing leaf bacteria in the orchards of our semitropics or wherever else the climate will permit their cultivation." (*David Fairchild.*)

44296 to 44311.¹ PRUNUS SERRULATA Lindl. Amygdalaceæ.

Flowering cherry.

From Yokohama, Japan. Scions purchased from the Yokohama Nursery Co. Received February 27, 1917.

44296. *Kirin*; late flowering, with large, very double, rose-colored flowers; one of the best. Considered by Wilson a form of *Prunus serrulata sachalinensis* and by Miyoshi forma *atrorubra* of *P. serrulata*.

44297. *Taki-nioi*; very fragrant, single, white flowers; called by Miyoshi forma *cataracta* of *Prunus serrulata* and by Wilson forma *cataracta* of *P. lannesiana*.

44298. *Shōgetsu*; a rather late, good variety with very large, long-pediciled, double, pale-pink flowers; called by Wilson forma *superba* of *Prunus serrulata sachalinensis* and by Miyoshi the same form of *P. serrulata*.

44299. *Kan-zakura*; a curious Japanese cherry from the vicinity of Tokyo, with single, pale-pink flowers which appear in late winter. It is now being cultivated in the Arnold Arboretum. (Adapted from Wilson, *The Cherries of Japan*, p. 31, as *P. serrulata*, var. *spontanea*, forma *præcox*.)

44300. *Minakami*; flowers very fragrant, white, single or nearly so; placed by Wilson under forma *donarium* of *Prunus lannesiana* and by Miyoshi under forma *glauca* of *P. serrulata*.

44301. *Kokonye*; flowers pink, double or semidouble, long pediceled and usually short peduncled. Considered by Wilson forma *homogena* of *Prunus serrulata sachalinensis*, while Miyoshi considered it a form of *P. serrulata*.

44302. *Ranzan*; a very pleasing form with single pink flowers on long slender pedicels. Considered by Wilson a form of *Prunus lannesiana*.

44303. *Yae-akebono*; flowers very large, fragrant, semidouble, soft pink, very beautiful; called by Wilson forma *versicolor* of *Prunus lannesiana* and by Miyoshi the same form of *P. serrulata*.

44304. *Gyciko*; semidouble flowers, pale yellow with greenish stripes, three flowered; considered by Wilson a form of *Prunus lannesiana* and by Miyoshi as forma *tricolor* of *P. serrulata*.

44305. *Horinji*; a small tree with dark-gray twigs, yellowish brown young leaves, and flowers with roundish petals, the outer rank pink, the inner rank white. Blossoming time from the middle to the end of April. (Adapted from Miyoshi, "*Japanische Bergkirschen*," *Journal of*

¹ See footnote, p. 11.

44296 to 44311—Continued.

the College of Science, Tokyo, vol. 34, art. 1, p. 110, as Prunus serrulata Lindl. forma decora.)

"This is a very beautiful form, with clusters of pale pink double or semidouble flowers." (*Wilson, The Cherries of Japan, p. 40, as Prunus serrulata, var. sachalinensis forma horinji.*)

44306. *Hitoye-fudanzakura*: a precocious form, which blooms in almost any season; single flowers, white or nearly so, of little horticultural value; considered by Wilson a form of *Prunus lannesiana*.

44307. *Asagi*. A Japanese cherry from Kohoku, with greenish white flowers tinged with pink, about 4 cm. in width, occurring in two to four flowered clusters. (*Adapted from Miyoshi, "Japanische Bergkirschen," Journal of the College of Science, Imperial University of Tokyo, vol. 34, pp. 124-125.*)

Called by Miyoshi, *Prunus serrulata*, subforma *luteoides* Miyoshi.

Received as *Asagi-zakura*, but no mention of this name is made in the above publication or in Wilson, *The Cherries of Japan*.

44308. *Botan-zakura*: one of the very best forms bearing very large, pale-pink, fragrant, semidouble flowers, called by Wilson forma *moutan* of *Prunus lannesiana* and by Miyoshi the same form of *P. serrulata*.

44309. *Surugadai-nioi*. A moderately large tree with brown-gray twigs, brownish red young leaves, and white, fragrant flowers. Blossoming time about the end of April. (*Adapted from Miyoshi, "Japanische Bergkirschen," Journal of the College of Science, Tokyo, vol. 34, art. 1, p. 132, as Prunus serrulata Lindl. forma surugadai-odora.*)

"Flowers semidouble, fragrant, nearly white, pendulous on long slender pedicels. This is a late-flowering form." (*Wilson, The Cherries of Japan, p. 51, as Prunus lannesiana forma surugadaiodora.*)

44310. *Shirayuki*. A moderately large tree with numerous closely crowded erect-spreading branches, smooth brown-gray twigs, yellowish brown young leaves, and white flowers with hairy peduncles. Blossoming time mid-April. (*Adapted from Miyoshi, "Japanische Bergkirschen," Journal of the College of Science, Tokyo, vol. 34, art. 1, p. 127, as Prunus serrulata Lindl. forma nivea.*)

"With its large flowers, this distinct form resembles *Prunus yedoensis* Matsumura, but the bracteoles show that it belongs to *P. serrulata* Lindl. . . . The branches are erect spreading and the flowers white, single or nearly so." (*Wilson, The Cherries of Japan, p. 34, as P. serrulata var. pubescens forma sirayuki.*)

44311. *Udzu-zakura*: a good form; produces near ends of branches pink, double flowers, with short peduncles and long pedicels. Called by Miyoshi forma *spiralis* of *Prunus serrulata* and by Wilson the same form of *P. serrulata sachalinensis*.

44312 to 44318.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received March 20, 1917.

44312. *BRASSICA PEKINENSIS* (Lour.) Gagn. Brassicaceæ. **Pai ts'ai.**

"(No. 2379a. Peking, China, February 5, 1917.) A medium-large, very solid, white, winter *pai ts'ai*, possessing excellent keeping qualities. Needs rich, friable soil to thrive well." (*Meyer.*)

44312 to 44318—Continued.

44313 to 44315. ALLIUM FISTULOSUM L. Liliaceæ. Leek.

44313. "(No. 2380a. Peking, China, February 5, 1917.) *Chi t'ui ts'ung*, meaning 'chicken-leg leek.' A short variety of winter leek; very firm and juicy." (Meyer.)

44314. "(No. 2381a. Peking, China, February 5, 1917.) *Kao chio pai ts'ung*, meaning 'tall-horn white leek.' A long, heavy variety of winter leek; a good keeper; stands repeated freezing and thawing." (Meyer.)

44315. "(No. 2382a. Peking, China, February 5, 1917.) *Pai lu ts'ung*, meaning 'frost-festival leek.' A medium long variety of winter leek." (Meyer.)

44316 to 44318. BRASSICA spp. Brassicaceæ. Mustard.

"*Chieh*. Mustard seed, such as is used in Peking to make ground table mustard. It is cultivated a few days' journey to the northwest of Peking in a region with cool nights in summer, a climate resembling that of the intermountain sections of the United States.

44316. "(No. 140b. Peking, China, February 5, 1917.) Price of this sample 28 cents in Yuan silver per catty." (Meyer.)

Received as *Brassica juncea*, but it is apparently not that species.

44317. "(No. 141b. Peking, China, February 10, 1917.) Price of this sample 26 cents in Yuan silver per catty." (Meyer.)

44318. "(No. 143b. Peking, China, February 10, 1917.) Price of this sample 24 cents in Yuan silver per catty." (Meyer.)

44319. OPUNTIA sp. Cactaceæ. Prickly-pear.

From Curacao, Dutch West Indies. Cuttings presented by Mr. H. M. Curran. Received March, 1917.

"Spineless form. March 1, 1917." (Curran.)

44320 to 44325.

From Richmond, Victoria, Australia. Seeds presented by Mr. F. H. Baker. Received March 7, 1917.

44320 to 44323. ACACIA spp. Mimosaceæ. Wattle.

"In sowing acacia seed they should have boiling water poured over them and should be allowed to stand for 24 hours. Do not use any manure, and sow them in the poorest soil." (Baker.)

44320. ACACIA DIFFUSA Lindl.

"Prickly acacia; good bloomer." (Baker.)

A straggling shrub, native of New South Wales, Australia, with loosely scattered, sessile, linear leaves about an inch long and yellow flowers in axillary heads about the size of a pea. (Adapted from the *Botanical Register*, vol. 8, pl. 634.)

44321. ACACIA IMPLEXA Benth.

"A fine, stately tree." (Baker.)

A tall Australian tree, 50 feet high, with light-green sickle-shaped lanceolate leaves 6 to 7 inches long, cream-colored flowers in short

44320 to 44325—Continued.

racemes, and light-brown pods, curved like an interrogation mark, 4 to 6 inches long. The dark-brown, hard, close-grained wood is much used for turnery and for all purposes which call for tenacity and strength. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 1, p. 185, and from *Maiden, Native Useful Plants of Australia*, p. 357.)

44322. ACACIA LEPROSA Sieber.

"A beautiful wattle; always weeping; a good bloomer." (*Baker.*)

An Australian shrub with erect, slender branches; linear or lance-shaped sicklelike leaves covered with very small patches of whitish matter exuded through the epidermis, and pale yellow flowers in clustering heads. The whitish patches on the leaves give the plant a gray, powdery appearance; hence its name. (Adapted from the *Botanical Register*, vol. 17, pl. 1441.)

44323. ACACIA PYCNANTHA Benth.

A small tree, native of southern Australia, with lanceolate or oblong leaves $2\frac{1}{2}$ to 6 inches long and showy, fragrant, yellow flowers in simple or compound racemes. The pods are 2 to 5 inches long. The bark contains the highest percentage of tannin of any of the species; a good gum exudes from the trees; and the tree itself is used as a sand binder. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 1, p. 184.)

44324. CANDOLLEA GRAMINIFOLIA (Swartz) F. Muell. Candolleaceæ.
(*Stylidium graminifolium* Swartz.)

A glabrous Australian perennial with a short tufted stem rarely lengthening to 4 or 5 inches and linear, rather rigid, flattened leaves usually 2 but at times 6 to 9 inches long. The scapes are up to $1\frac{1}{2}$ feet high, the upper quarter or half being occupied by a narrow, simple raceme or interrupted spike of pink flowers. The oval capsules are a quarter to half an inch long. (Adapted from *Bentham, Flora Australiensis*, vol. 4, p. 10.)

44325. KENNEDYA MONOPHYLLA Vent. Fabaceæ.
(*Hardenbergia monophylla* Benth.)

A trailing herb, native of southern Australia, with leaves consisting of one ovate or lance-shaped leaflet 2 to 4 inches long, violet flowers nearly half an inch long in few-flowered racemes, and flat papery pods about $1\frac{1}{2}$ inches long. (Adapted from *Bailey, Queensland Flora*, pt. 2, p. 424.)

44326 to 44330. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Kingston, Jamaica. Cuttings presented by Mr. William Harris, Superintendent of Public Gardens. Received March 12, 1917.

"Jamaica seedlings raised at our experiment station." (*Harris.*)

44326. No. 70.

44329. No. 73.

44327. No. 71.

44330. No. 74.

44328. No. 72.

44331 and 44332. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Cienfuegos, Cuba. Cuttings presented by Mr. Robert M. Grey, Harvard Experiment Station. Received March 13, 1917.

44331. *Demerara* 74.44332. *Demerara* 95.**44333. PYRUS CALLERYANA Decaisne. Malaceæ.****Pear.**

From Hongkong, China. Grafts presented by Mr. W. T. Tutcher, superintendent, Botanical and Forestry Department. Received March 14, 1917.

See S. P. I. No. 43987 for previous introduction and description.

44334. PONCIRUS TRIFOLIATA (L.) Raf. Rutaceæ.*(Citrus trifoliata L.)***Trifoliate orange.**

From Taiku, Korea. Sprouts presented by Rev. James E. Adams, Korean Mission. Received March 19, 1917.

A shrub or small tree used extensively as a hedge plant in our Southern States, where it is quite hardy.

44335. ILEX MACROPHYLLA Wall. Aquifoliaceæ.**Holly.**

From Pisa, Italy. Seed presented by the director, Botanic Garden. Received March 23, 1917.

A tree, native of Java and Sumatra, about 15 feet high, with gray bark, rigid, shining leaves 4 to 7 inches long, flowers in branched cymes, and round drupes containing about eight stones. (Adapted from *Hooker, Flora of British India*, vol. 1, pp. 604-605.)

44336. CACARA EROSA (L.) Kuntze. Fabaceæ.**Yam bean.***(Pachyrhizus angulatus Rich.)*

From Kingston, Jamaica. Seed presented by Mr. William Harris, Superintendent of Public Gardens. Received March 23, 1917.

A shrubby, climbing, leguminous plant with large edible roots that also produce a valuable starch.

See S. P. I. Nos. 22971 and 33258 for previous introductions.

44337. CUCUMIS MELO L. Cucurbitaceæ.**Melon.**

From Baku, Russia. Seed presented by Mr. Roy G. Pierce, Forest Pathologist, who secured them from Mr. Arthur Knapp. Received March 24, 1917.

"Seeds from a melon called a *denya*, which is grown in the Trans-Caucasus. The melon is yellow and very like the California *cassaba* melon. The remarkable thing about this melon is that if it is hung up in a cool place it will keep for a year." (*Knapp*.)

44338. ANANAS SATIVUS Schult. f. Bromeliaceæ.**Pineapple.**

From Antigua, West Indies. Plants purchased from Mr. J. Jackson, curator and superintendent, Agricultural Department. Received March 15, 1917.

White Antigua pineapple. A medium-sized pineapple. It is light colored, oblong in shape, with a quality better than the average. It is used as a dessert and for general kitchen purposes. (Adapted from *Bulletin No. 8, Division of Pomology, U. S. Department of Agriculture*.)

44339 to 44343.

From Kew, England. Seeds presented by Sir David Prain, director, Royal Botanic Gardens. Received March 19, 1917.

44339. *BERBERIS* sp. Berberidaceæ.

Barberry.

Received as *Berberis vilmoriniana*, for which a place of publication has not yet been found.

See S. P. I. Nos. 33024, 40139, and 42184 for previous introduction.

44340. *MALUS NIEDZWETSKYANA* Dieck. Malaceæ.

Apple.

A tree, native of southwestern Siberia, resembling the common apple in habit, with reddish tinged young wood and young leaves, large clusters of deep-pink flowers, and dark-red conical apples with purplish flesh. The attractive coloring of the wood, leaves, and fruit makes this an especially ornamental species. (Adapted from *The Garden*, May 22, 1915, and from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 5, p. 2871, as *Pyrus malus niedzwetskyana*.)

44341. *SORBUS KOEHNEANA* C. Schneid. Malaceæ.

A shrub, native to central China, up to 4 meters (13 feet) in height, with generally smooth, compound leaves from 8 to 15.5 cm. long; white flowers, usually on the very short lateral branches; and round white fruits, about 7 or 8 mm. in diameter. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 1, pp. 471-472.)

44342. × *SORBUS MEINICHII* (Lindeb.) Hedl. Malaceæ.

A hybrid tree, whose parents are *Sorbus aucuparia* and *S. hybrida*. It is a native of the island of Åland and the neighboring islands and has compound, serrate leaves. (Adapted from *Hedlund, Monographie der Gattung Sorbus*, pp. 49-50.)

44343. *SORBUS VILMORINI* C. Schneid. Malaceæ.

A large shrub or small tree, native of western China, with attractive, pinnate leaves; white flowers about a quarter of an inch in diameter, in corymbs appearing in June; and pale rosy-red fruits. In summer and also in autumn this is a most attractive *Sorbus*. (Adapted from *The Garden*, September 2, 1916.)

44344. *ACHRAS ZAPOTA* L. Sapotaceæ.

Sapodilla.

(*A. sapota* L.)

From Bokeelia, Fla. Seed presented by Mr. Harry P. Johnson. Received March 24, 1917.

"Seeds of the largest sapodilla fruit I have ever seen; grown on my place here. As large as a big orange." (*Johnson*.)

44345. *INODES EXUL* O. F. Cook. Phœnicaceæ.

Palmetto.

From San Antonio, Tex. Seed presented by Mr. C. R. Letteer, San Antonio Experiment Farm. Received March 26, 1917.

"Collected at Victoria, Tex., in 1912." (*Letteer*.)

A large palmetto, cultivated in Texas, with deep-green foliage, solitary fruits, and large seeds not wrinkled above. (Adapted from *Circular 113, Bureau of Plant Industry*, pp. 11-14.)

See also S. P. I. No. 35116 for further description.

44346. LUCUMA sp. Sapotaceæ.

From El Coyolar, Costa Rica. Seed presented by Mr. Carlos Wercklé.
Received March 7, 1917.

"Seeds of the apple-shaped *nispero sapotilla*. Better than *Vitellaria multiflora*; flesh of the same consistency and appearance, but more highly colored." (Wercklé.)

44347 to 44356.

From Maidstone, England. Plants presented by George Bunyard & Co., Ltd. Received March 29, 1917. Quoted notes from Bunyard's Catalogue.

44347 to 44349.¹ *RIBES VULGARE* LAM. Grossulariaceæ. Garden currant.

44347. "*Moore's Ruby*. Berries medium size. Midseason. Growth very upright; very fertile; a hardy and desirable sort. Raised by Judge Moore, U. S. A."

44348. "*Skinner's Early*. Berries medium, bright red; bunches long, very fertile; growth vigorous, upright. The earliest of all; most valuable for market. This variety is esteemed in Kent and is named after a local grower, but is quite possibly the old sort renamed."

44349. "*Utrecht*. Berries medium, dark red; bunches medium; growth vigorous, upright; leaves resembling *Scotch* but distinct. A useful midseason variety, origin probably indicated by its name."

44350 to 44356. *CORYLUS AVELLANA* L. Betulaceæ. Filbert.

44350. "*Cosford*. Nut almost round, large, most excellent flavor, and very thin shell. A prolific variety, and recommended as a pollenizer for filberts of less fertile sorts. Possibly originated in Suffolk, where there is a hundred of *Cosford*."

44351. "*Duke of Edinburgh*. Nut large, oblong; shell rather thick; of excellent flavor; quite one of the best flavored. Raised by Mr. Webb, of Calcot, and certificated by the Royal Horticultural Society in 1883."

44352. "*Kentish Cob*. Nut large, broad and long, excellent flavor; prolific; the best for all-round use. Almost exclusively grown in Kent for market work. Raised by Mr. Lambert, of Clondhurst, Kent, about 1830; hence its synonym '*Lambert's*' filbert."

44353. "*Merveille de Bolwyller*. Nut remarkably broad and thick, very handsome and of first-class flavor; vigorous grower. Originated with an amateur in Silesia about 1840 and sold by Messrs. Baumann of Bolwyller."

44354. "*Pearson's Prolific*. Nut round, short, good flavor; an abundant and early bearer; produces a large number of catkins and is valuable for purposes of cross-fertilization. Introduced by Messrs. Pearson, of Chilwell."

44355. "*Prolific*. Curiously frizzled husk; nuts small but produced in large clusters, often ten to a bunch; very early, sweet, and good. Originated in a garden at Moreton, Norwich, about 1840. Sometimes called the *Frizzled nut*."

44356. "*Red skinned*. Resembling the *White* filbert in all respects save the red skin of the kernel. Has been known since 1800."

¹ See footnote, p. 11.

44357 and 44358. ORYZA SATIVA L. Poaceæ. Rice.

From San Jose, Costa Rica. Presented by Mr. J. E. van der Laat, director, Department of Agriculture. Received February 13, 1917.

44357. A variety received without description.

44358. "This is a very prolific rice, but it has degenerated here by neglect." (*Van der Laat.*)

44359 to 44361.

From Cairo, Egypt. Seeds presented by Mr. F. G. Walsingham, horticultural division, Ministry of Agriculture, Gizeh Branch. Received March 10, 1917.

44359. MONTANOA HIBISCIFOLIA (Benth.) C. Koch. Asteraceæ.

Tree daisy.

One of the tree daisies of Central America, which is easily distinguished by its five to seven lobed leaves, which are opposite and entire. It is easily cultivated, the seeds being started indoors and the plants transferred to the open for foliage effects. It may also be propagated by cuttings. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 4, p. 2064, and from *Koch, Wochenschrift des Vereines zur Beforderung des Gartenbaues*, vol. 7, p. 407.)

44360. SOLANUM sp. Solanaceæ.

Wild potato.

Received as *Solanum rondeletii*, for which a place of publication has not yet been found.

44361. ZIZIPHUS SPINA-CHRISTI (L.) Willd. Rhamnaceæ.

A shrub, native of Palestine and Egypt, 3 to 5 meters high, with whitish, spiny branches, rounded or heart-shaped leaves 2 to 4 cm. long, and roundish, dry, astringent fruits about the size of a hazelnut. As a stock upon which to graft the common jujube this species is not satisfactory, for it has a tendency to sucker. The best use to which this shrub can be put is that of a shade tree for crops. When once established a clump can scarcely be eradicated. (Adapted from *Post, Flora of Syria*, p. 201, and from *Bagnol, in Bulletin de la Société Nationale d'Acclimatation de France*, vol. 44, pp. 153-157.)

44362. DIOSPYROS KAKI L. f. Diospyraceæ. Kaki.

From Felton, Del. Cuttings presented by Mr. J. W. Killen. Received March 29, 1917.

"This persimmon has withstood our climate for the past 25 years, though it has been killed back a number of times. It had no protection at all this past winter and does not seem to have been affected by the cold this time. It has borne a number of times. The fruits are seedless and about 2½ to 3 inches in diameter." (*Killen.*)

44363. DIOSPYROS DISCOLOR Willd. Diospyraceæ. Mabolo.

From Manila, Philippine Islands. Cuttings presented by Mr. Adn. Hernandez, Director of Agriculture. Received March 28, 1917.

A common Philippine tree of medium size, 8 to 15 meters high, with dark-green leaves and roundish or somewhat flattened velvety reddish fruits about 7.5 cm. in diameter, containing cream-colored, rather dry, sweet, and aromatic flesh inclosing several large seeds. (Adapted from the *Philippine Agricultural Review*, third quarter, 1916, p. 234.)

44364. MEDICAGO SATIVA L. Fabaceæ. Alfalfa.

From Russia. Seed presented by Mr. W. P. Cresson, secretary of embassy in charge of the consulate at Tiflis. Received March 29, 1917.

"An inferior quality from the region of Elisavetpol." (*Cresson.*)

44365. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Peru. Seed purchased from Mr. H. P. Archer, Lima. Received March 30, 1917.

"*Palta*, from the Chanchamayo. The months of December and January are the best ones for getting paltas." (*Archer.*)

44366 to 44369.

From Bogota, Colombia. Seeds presented by Mr. M. T. Dawe, Agricultural Adviser and Director of Agriculture. Received March 30, 1917.

44366. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. Tomato.

"Seeds of the wild variety found in this neighborhood." (*Dawe.*)

44367. ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

See S. P. I. No. 44251 for previous introduction and description.

44368. CARICA PAPAYA L. Papayaceæ. Papaya.

"In connection with the improvement of the papaya in southern Florida and the development of strains suitable for commercial purposes, it is desirable that varieties be obtained for trial from as many different regions as possible. The papayas of Colombia are of particular interest as coming from a region in which several wild species of *Carica* occur. From such a region there is always the possibility of getting hybrids or distinctly new strains." (*Popenoe.*)

44369. DOLICHOLUS PHASEOLOIDES (Swartz) Kuntze. Fabaceæ.
(*Rhynchosia phaseoloides* DC.)

"*Pionia*, a small deep-red and black seed from a creeping plant. Heaving the seed into water to soften, grinding it afterwards, and straining the paste and mixing it with sirup is said to be effective to cure epilepsy." (*Alcazar.*)

44370. CANNABIS SATIVA L. Moraceæ. Hemp.

From Keijo, Chosen. Presented by Mr. Nagashima, of the Government Industrial Model Farm, through Mr. L. H. Dewey, of the Department of Agriculture. Received March 31, 1917.

This number differs somewhat from other so-called Keijo strains, and from the single trial so far given it would seem to be less productive.

44371. CANNABIS SATIVA L. Moraceæ. Hemp.

From Seoul, Chosen. Presented by the Yokohama Nursery Co., Yokohama, Japan, who secured it from Mr. Kato, Seoul. Received through Mr. L. H. Dewey, of the Department of Agriculture, March 31, 1917.

A promising strain which produced plants 4.3 meters in height during the only trial so far accorded it.

44372 to 44374. CITRUS spp. Rutaceæ.

From Lamac, Bataan, Philippine Islands. Seeds presented by Mr. P. J. Wester, Lamac Experiment Station, through Mr. Adn. Hernandez, Director of Agriculture, Manila. Received March 31, 1917.

44372 and 44373. CITRUS MEDICA L.

Citron.

44372. The identification of this number was apparently questioned by Mr. Wester, but it seems to be at least a form of *Citrus medica*.

44373. An unnamed variety received without description.

44374. CITRUS MEDICA ODORATA Wester.

Tihi-tihi.

See also S. P. I. No. 44139 for further description.

44375 to 44404.

From Elstree, Herts, England. Plants presented by Hon. Vicary Gibbs, through Mr. E. Beckett, The Gardens, Aldenham House. Received March 28, 1917.

44375. ACER HOOKERI Miquel. Aceraceæ.

Maple.

A tree, 40 to 50 feet high, native of the eastern Himalayas, with green, cordate, entire, finely serrate leaves 3 to 6 inches long, flowers in simple racemes 2 to 4½ inches long, and glabrous samaras with venose wings. (Adapted from *Hooker, Flora of British India, vol. 1, p. 694.*)

44376. AESCULUS GLABRA LEUCODERMIS Sarg. Aesculaceæ.

Horse-chestnut.

This form is characterized by the smooth, pale, often nearly white bark of the trunk and branches and is found in the southeastern United States. (Adapted from *Kew Bulletin of Miscellaneous Information, Appendix 3, 1914, p. 57.*)

44377. ALNUS SITCHENSIS Sarg. Betulaceæ.

Sitka alder.

A tree, native of northwestern United States and Alaska, up to 40 feet in height, with a narrow head of short and nearly horizontal branches, ovate, light-green, dentate leaves 3 to 6 inches long, and staminate catkins 4 to 5 inches long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 184.*)

44378. ARALIA CHINENSIS L. Araliaceæ.

Chinese Angelica tree.

Var. *fastigiata*. A garden variety with the branches more or less parallel with the main trunk.

44379. ARONIA ARBUTIFOLIA (L.) Pers. Malaceæ.

(*Pyrus arbutifolia* L. f.)

Var. *grandiflora*. A large-flowered garden variety of a bushy shrub, native of eastern North America. It is from 5 to 10 feet high, with narrowly oval leaves with dark-green upper surfaces and gray velvety lower surfaces. It has white or slightly rosy flowers produced in small corymbs and small, nearly globular red fruits.

44380. BERBERIS SARGENTIANA C. Schneid. Berberidaceæ. Barberry.

A black-berried barberry from western Hupeh, China, reaching a height of 2 meters. It is the only evergreen barberry which has proved entirely hardy at the Arnold Arboretum, and for this reason is one of the most desirable of the recent introductions as a garden plant. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 359.*)

44375 to 44404—Continued.**44381. BERBERIS HOOKERI** Lem. Berberidaceæ.**Barberry.**

An evergreen spiny Himalayan shrub 3 to 5 feet in height, with tufted, lanceolate-obovate, dark-green, leathery leaves 1 to 3 inches long with slender teeth on the margins. The pale-yellow flowers are two-thirds of an inch wide, and the black-purple, narrowly cylindrical berries often remain on the plant until the following spring. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 243.)

44382. BETULA JAPONICA MANDSHURICA (Regel) Winkl. Betulaceæ.**Birch.**

A white-barked tree, native of western China, 10 to 25 meters in height, with very glabrous, regularly dentate leaves. The bark is used for lining straw hats. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 461.)

44383. CISSUS STRIATA Ruiz and Pav. Vitaceæ.*(Vitis striata* Miquel.)

A low, shrubby evergreen vine of graceful habit, native of Chile and southern Brazil, with small, three to five foliolate, serrate leaves, yellowish flowers in many-flowered cymes, and round-flattened fruits about the size of a pea. This vine grows well in southern California. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 776.)

44384 and 44385. COTONEASTER spp. Malaceæ.**44384. "Forrest No. 33."****44385. "Forrest No. 5667."****44386. COTONEASTER DAMMERI** C. Schneid.

A prostrate evergreen shrub, native of central China, with pure-white, solitary flowers, and coral-red fruits a quarter of an inch wide. It is quite hardy and is very distinct among cotoneasters for its perfectly prostrate habit. Its fruits are brightly colored, and the plant will no doubt prove useful as an evergreen carpet shrub; also for covering sunny slopes, as it is very vigorous. It occurs wild on heaths and rocky ground. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 411.)

44387. COTONEASTER ROYLEI Hort.

"I have labeled these [small-leaved] forms in several herbaria as [*C. racemiflora*] var. *royleana* Dipp., because I believed that these (especially *C. roylei* or *royleana* Hort.) corresponded with the spontaneous material; but I am now dubious about this and I am holding out the spontaneous forms as the var. *kotschyi*. The named garden forms remain confused." (*Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 1, p. 754.)

44388. CRATAEGUS NITIDA (Engelm.) Sarg. Malaceæ.**Hawthorn.**

A tree, up to 30 feet high, from Illinois and Kansas, with spreading branches, coarsely serrate leaves, and dark dull-red fruits about half an inch long. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 883.)

44389. DIERVILLA JAPONICA (Thunb.) DC. Caprifoliaceæ.**"Forrest No. 7882."**

44375 to 44404—Continued.

44390. *HYPERICUM* sp. Hypericaceæ.

St.-John's-wort.

"Wilson No. 256." "From cliffs and thickets, Wushan Hsien, eastern Szechwan, at an altitude of 1,000 meters, 1907. A shrubby plant, 6 cm. tall, with yellow flowers." (*Sargent, Plantae Wilsonianae, vol. 3, p. 452.*)

44391. *JASMINUM* sp. Oleaceæ.

Jasmine.

"Forrest No. 11472."

44392. *LARIX DAHURICA PRINCIPIS-RUPPRECHTII* (Mayr) Rehd. and Wils.
Pinaceæ. Larch.

A tree from northern China, with beautiful pink cones up to 1½ inches long and leaves up to 1¾ inches in length. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1823.*)

See also S. P. I. No. 42194 for further description.

44393. *LAUROCERASUS OFFICINALIS* Roemer. Amygdalaceæ.

(*Prunus laurocerasus* L.)

Cherry laurel.

Var. *camelliaefolia*. A garden variety with leaves of ordinary size, but curled and twisted. Curious but not ornamental. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 240.*)

44394. *LONICERA NITIDA* Wilson. Caprifoliaceæ.

Honeysuckle.

An evergreen shrub from western China, up to 6 feet high, with upright branches, broadly oval or oblong glossy leaves, fragrant whitish flowers one-third of an inch long, and purple fruits. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1907.*)

44395. *LONICERA PILEATA* Oliver. Caprifoliaceæ.

Honeysuckle.

A much-branched, low, evergreen or partially deciduous shrub from central and western China, about a foot high, with slender branches, oblong, lance-shaped, dark, shining-green leaves half to an inch long, and pale-yellow flowers in almost sessile pairs. It is quite hardy in England. (Adapted from *Curtis's Botanical Magazine, pl. 8060.*)

44396. *ABIES* sp. Pinaceæ.

Fir.

"Wilson No. 6744."

44397. *PICEA KOYAMAI* Shiras. Pinaceæ.

Spruce.

A Japanese tree, up to 30 feet in height, with bright reddish brown branchlets, bluish white, 4-sided sharp-pointed leaves one-third to half an inch long, and light brownish green cones 1½ to 2½ inches long with broadly oval scales. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2621.*)

44398. *PIPTANTHUS CONCOLOR* Harrow. Fabaceæ.

"Wilson No. 885." A bush, 1 to 1.6 meters tall, found in western Szechwan, China, at elevations up to 3,500 meters. It has alternate, trifoliate leaves, almost the same color above as below, with white hairs on the margins; yellow pealike flowers; and silky pods about 6 mm. long. (Adapted from *Gardeners' Chronicle, December 16, 1916, p. 289.*)

44399. *PYRACANTHA GIBBSII* A. Jackson. Malaceæ.

A shrub from western China up to 14 feet high, nearly spineless, with large, ovate-oblong, variable leaves up to 3 inches long and abundant fruits about 7 mm. in diameter. The leaves are commonly used by the Chinese for tea. (Adapted from *Gardeners' Chronicle, December 30, 1916, p. 399.*)

44375 to 44404—Continued.**44400. ROSA OMEIENSIS** Rolfe. Rosaceæ.**Rose.**

A stout, branched shrub, from 3 to 10 feet high, with young shoots covered with dense bristles and the older stems armed with stout straight thorns. The long green leaves are composed of 9 to 13 sharply serrate leaflets, and the white flowers, which are over an inch in diameter, occur singly on short lateral twigs. The bright-red fruits are up to half an inch in length, and their yellow stalks are very striking in autumn. These fruits are said to be eaten in China, where the plant grows at an elevation of 8,000 to 9 500 feet. It thrives in good loamy soil and may be propagated from the freely produced seeds. (Adapted from *Curtis's Botanical Magazine*, pl. 8471.)

44401. RUBUS IRENAEUS Focke. Rosaceæ.

A prostrate evergreen shrub, native of central and western China, beset with small decurved prickles and having white flowers, large red fruits, and simple leaves, suggesting those of coltsfoot. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 460.)

See also S. P. I. No. 40595 for further description.

44402. RUBUS LASIOSTYLUS DIZYGOS Focke. Rosaceæ.

An erect deciduous shrub, native of central China, 4 to 6 feet high, with waxy blue-white stems, compound leaves, small, rosy flowers, and agreeably acid, red fruits an inch in diameter. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 462.)

See also S. P. I. No. 42587 for further description.

44403. STYRAX WILSONII Rehder. Styracaceæ.

A very pretty, small, compact Chinese shrub with alternate, oval, irregularly dentate leaves up to two-thirds of an inch long, white flowers in axillary and terminal racemes, appearing when the plant is but a few inches high and 2 or 3 years old, and gray-velvety, roundish fruits about one-third of an inch long. It is best propagated by seeds, although layering may be used. On one occasion, in the nursery at Kew, England, this shrub withstood a temperature of 12° F. (Adapted from *Curtis's Botanical Magazine*, pl. 8444.)

44404. VIBURNUM HUPEHENSE Rehder. Caprifoliaceæ.

A deciduous shrub, native of Hupeh, China, with coarsely serrate, roundish oval leaves, and flowers in large flat corymbs. The red fruit is ovoid, from one-third to two-fifths of an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 650.)

See also S. P. I. No. 42197 for further description.

44405. NYPA FRUTICANS Wurm. Phœnicaceæ.**Nipa palm.**

From Manila, Philippine Islands. Seeds presented by Mr. Adn. Hernandez, director, Bureau of Agriculture. Received March 27, 1917.

A creeping Philippine palm with a stout branching rootstock and large leaves 5 to 10 meters long. The sap is collected from the immature inflorescence and made principally into alcohol, and to a less extent into vinegar and sugar. A good preserve is made by boiling the immature seeds in sugar. (Adapted from the *Philippine Agricultural Review*, third quarter, 1916, p. 174.)

For an illustration of the nipa palm in fruit, see Plate VI.

44406. DAHLIA sp. Asteraceæ.**Tree dahlia.**

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Numbered March, 1917.

"(No. 106. From Tactic, Alta Vera Paz.) A double white variety of the common tree dahlia. The plant was not seen in bloom, and there is a possibility that it may not be true to name, but the Indian from whom it was obtained assured me that it was the double white form and not the common single pink. The flowers of the double white variety (which seems to be the most beautiful form of all) are used extensively by the Indians of Tactic for decorating the images of the saints. This seems to me to be a very promising plant for cultivation in California. It is likely that this is a cultivated form of *Dahlia maxoni* Safford." (Popenoe.)

44407 to 44417.

From Buenos Aires, Argentina. Seeds presented by the Jardin Botanico. Received March 10, 1917.

44407. AEXTOXICON PUNCTATUM Ruiz and Pav. Euphorbiaceæ.

A Chilean tree, sometimes reaching a height of 40 feet, with beautiful dark-green foliage. It thrives in both the dry and moist portions of Chile. (Adapted from *note of W. F. Wight, May 7, 1913.*)

See also S. P. I. No. 36123 for further description.

44408. CHENOPODIUM sp. Chenopodiaceæ.

A very small seeded variety, apparently allied to *Chenopodium ambrosioides*.

44409. GEVUINA AVELLANA Molina. Proteaceæ.**Avellano.**

A Chilean evergreen tree, reaching a height of 12 meters. Its large, dark-green, glossy pinnate leaves and axillary racemes of white flowers make a very pleasing combination during the winter. The pleasant-flavored nuts resemble the hazelnut in taste and are eaten raw or cooked. The wood is suited for general carpentry and for cabinetwork, the medullary rays giving it a pleasing appearance. (Adapted from *Castillo and Dey, La Jeografia Botanica del Rio Valdivia, p. 39*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1335.*)

44410. MYRCIARIA CAULIFLORA (Mart.) Berg. Myrtaceæ. Jaboticaba.

"One of the best indigenous fruits of Brazil, and at the same time one of the most curious and interesting, due to its habit of producing its fruits directly upon the trunk and larger branches (cauliflory). Several species are grown under the name of *jaboticaba*, and they are still somewhat confused botanically, but it appears that most of the plants common in cultivation belong either to *Myrciaria cauliflora* or *M. jaboticaba*, fruits of the latter being distinguishable from those of the former by the presence of a slender stem.

"The *jaboticaba* occurs in southern Brazil, both wild and cultivated. It is a very handsome tree, reaching a height of 35 or 40 feet, with a dense dome-shaped crown. The leaves are small, lanceolate, light green in color, and the flowers are white, with four petals and a conspicuous tuft of stamens. The fruits are produced in the greatest abundance and are the size of large grapes, with a tough, leathery skin, white, juicy pulp of rather acid, aromatic flavor, and two to four flattened oval

44407 to 44417—Continued.

seeds. The resemblance between the *jaboticaba* and some of the grapes of the Muscadine group, e. g., the *James*, is very striking, not only in the general appearance of the fruit but also in flavor.

"The *jaboticaba* prefers a soil that is rich and deep. It is rather slow of growth, coming into bearing after six or eight years. It withstands slight frosts and gives promise of being successful in southern Florida and perhaps also in sheltered localities throughout southern California. At the present time seed propagation is the only means of multiplication which is commonly employed, but inarching or some other means of propagation should be utilized to perpetuate good varieties." (*Popenoe*.)

44411. NAGEIA ANDINA (Poepp.) F. Muell. Taxaceæ.

(*Podocarpus andina* Poepp.)

A Chilean tree, up to 20 feet in height, with upright or somewhat spreading branches, indistinctly 2-ranked, linear, dark-green leaves half an inch to $1\frac{1}{2}$ inches long, flowers in spikes, and fruits without fleshy receptacles. It is propagated by seeds or by cuttings made from almost ripened wood under glass and grows out of doors only in the Southern States and California. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2725.)

44412. NOTHOFAGUS ANTARCTICA (Forst.) Oerst. Fagaceæ.

Antarctic beech.

A large deciduous South American tree, found from Tierra del Fuego northward to Concepcion, Chile. It has cordate or broadly oval irregularly dentate leaves half an inch to $1\frac{1}{4}$ inches long, and the staminate flowers appear in May singly, in pairs, or in threes. Propagation is by layering. Few trees have greater elegance and distinction than this when young. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 98.)

44413. SOPHORA TETRAPTERA J. Miller. Fabaceæ.

Pelú. A Chilean tree, attaining a height of 10 meters, with green, pinnate leaves, golden yellow flowers, and indehiscent, 4-winged, cork-covered pods. It prefers to grow near rivers, which afford excellent opportunities for the dissemination of the corky pods. The exceedingly hard wood is used for plow points, wheels, etc. (Adapted from *Castillo and Dey, La Jeografia Botanica del Rio Valdivia*, p. 56.)

44414. TRICONDYLIUS DENTATUS (Ruiz and Pav.) Kuntze. Proteaceæ.

(*Lomatia dentata* R. Br.)

Avellanillo. A Chilean tree, up to 10 meters in height and 30 cm. in diameter, with alternate, oval, dentate leaves, abbreviated lateral racemes of yellowish white flowers, and papery follicles. Of no industrial value. (Adapted from *Brown, Transactions of the Linnean Society of London*, vol. 10, p. 201, and from *Castillo and Dey, La Jeografia Botanica del Rio Valdivia*, p. 41.)

44415. TRICONDYLIUS OBLIQUA (Ruiz and Pav.) Kuntze. Proteaceæ.

(*Lomatia obliqua* R. Br.)

Badal. A Chilean tree, with alternate, smooth, serrate leaves, yellowish white flowers in axillary racemes, and papery follicles inclosing winged seeds. Attains a height of 8 to 19 meters, with a diameter of 1 meter. (Adapted from *Brown, Transactions of the Linnean Society of London*, vol. 10, p. 201, and from *Castillo and Dey, La Jeografia Botanica del Rio Valdivia*, p. 39.)

44407 to 44417—Continued.**44416. PHYLLOCLADUS sp. Taxaceæ.**

"Tree or shrub with the branchlets flattened and expanded into rigid and coriaceous, toothed or lobed, leaflike cladodia. The true leaves are reduced to linear scales." (*Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2607.*)

44417. WEINMANNIA TRICHOSPERMA Cav. Cunoniaceæ.**Tineo.**

A Chilean and Peruvian tree, 15 to 18 meters high, with opposite, unequally pinnate leaves with winged petioles, aromatic white flowers in axillary racemes, and small oval capsules. The great fragrance of the flowers attracts many insects, which lay their eggs in the bark of the tree and produce larvæ which bore into the trunk and make the wood unfit for use. (Adapted from *Castillo and Dey, La Jeografia Botanica del Rio Valdivia, p. 52, fig. 30.*)

44418 to 44425.

From Elstree, Herts, England. Plants presented by Hon. Vicary Gibbs, through Mr. E. Beckett, The Gardens, Aldenham House. Received March 27, 1917.

44418. BERBERIS AQUIFOLIUM Pursh. Berberidaceæ.**Barberry.**

Var. *vicarii*. A variety originating in the gardens of Hon. Vicary Gibbs and presumably named for him.

"The best of the mahonias." (*Gibbs.*)

44419. CEANOTHUS HYBRIDUS Hort. Rhamnaceæ.

Var. *Glorie de Versailles*. A half-evergreen shrubby garden variety, distinguished by its large panicles of bright-blue flowers. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 696.*)

44420. CEANOTHUS HYBRIDUS Hort. Rhamnaceæ.

Var. *Perle rose*. A garden variety, with beautiful pink flowers. (Adapted from *V. Lemoine & Fils, Catalogue et Primecourtant, 1914, p. 38.*)

44421. COTONEASTER sp. Malaceæ.

"Forrest No. 32."

44422. COTONEASTER SALICIFOLIA FLOCCOSA Rehd. and Wils. Malaceæ.

A half-evergreen shrub from western China, up to 15 feet high, with oblong to lance-oblong bright-green leaves; flowers in dense corymbs; and 3-seeded bright-red fruits nearly one-fourth of an inch in diameter. The value of this shrub lies in the ornamental effect of the fruits in autumn. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 867.*)

44423. MALUS BACCATA (L.) Moench. Malaceæ.**Crab apple.**

(*Pyrus baccata* L.)

Var. *Cashmere* crab. A horticultural variety of the Siberian crab, presumably from Kashmir, India.

44424. POPULUS SZECHUANICA C. Schneid. Salicaceæ.**Poplar.**

A common tree in the forests of Szechwan, China, growing to a large size, with massive branches and stout branchlets. It has very large, ovate, elongated or rounded leaves. It is hardy in the northeastern United States. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2763.*)

44418 to 44425—Continued.**44425.** PYRUS sp. Malaceæ.

Pear.

A variety received without description.

44426. ROSA ODORATA (Andr.) Sweet. Rosaceæ.

Rose.

One of two roses associated with S. P. I. No. 22449. Renumbered for convenience in distribution.

"A rose which Mr. Meyer sent in from China, which he collected in a garden at Pautungfu, Chihli Province. For several years past it has attracted considerable attention as a pillar rose. The form that Mr. Meyer collected produces small, double, white flowers with pale pink centers; it blooms quite freely. Although it is an attractive rose, the discovery by Mr. Edward Goucher of its peculiar usefulness as a stock on which to bud or graft other roses now constitutes its chief interest to rose growers. Cuttings of the young wood grow so readily that with ordinary care 90 to 95 per cent of those put in an ordinary propagating bench will root. It has also been found that the vigorous young canes, often 5 to 8 feet long, can be used as a stock upon which to insert between each two leaves or eyes, in the manner of ordinary shield or slip budding, buds of any varieties it is desired to propagate. Later, when these buds have united, the canes are made into ordinary cuttings, each with a bud of the desired variety, which will root readily in slight bottom heat in an ordinary sand propagating bench, while the inserted buds will give rise to strong, healthy plants.

"Further, this rose has been successfully used as a grafting stock. The young canes are cut into suitable lengths and upon these are cleft-grafted or 'worked' scions or pieces of wood of the desired variety. The completed grafts are then potted singly in small pots, which are placed in an ordinary sweat box used for young grafted stock and maintained at a temperature of 75° to 80° F. Simultaneously the cuttings root and the grafts grow, and as many as 90 per cent of the cuttings thus made have succeeded." (*Peter Bisset.*)

44427 to 44431.

From Canton, China. Seeds presented by Mr. G. Weidman Groff, Canton Christian College. Received March 13, 1917.

44427 and 44428. BRASSICA spp. Brassicaceæ.

Mustard.

44427. "*T'ai ts'eng shao po* (Taai ts'eng shiu paak)."**44428.** "*Pen t'ai* (Poon tei)."**44429 to 44431.** RAPHANUS SATIVUS L. Brassicaceæ.

Radish.

44429. "*Hua mien* (Fa min)."**44431.** "*Tung kua*."**44430.** "*Pa chih*."**44432.** MEDICAGO SATIVA L. Fabaceæ.

Alfalfa.

From Shensi, China. Presented by Dr. A. C. Selmon, superintendent of the North China Mission of Seventh-Day Adventists, Nanking, China. Received January 2, 1917.

"Some months ago I was traveling in the northwest of China in the Province of Shensi, where the climate is very dry. There I found that the farmers raised a plant somewhat resembling alfalfa, which also grew wild. I found a specimen of it growing on the top of the city wall (60 feet high) at Sianfu, the capital of Shensi Province. It makes a very good rough feed for stock." (*Selmon.*)

44433 to 44436.

From Oran, Salta, Argentina. Seeds presented by Mr. S. W. Damon. Received March 7, 1917.

44433. *GOURLIEA DECORTICANS SUBTROPICALIS* Lillo. Fabaceæ.

Chañar. A tall tree, native of northern Argentina, with a crooked, tapering trunk about 1.4 meters ($4\frac{1}{2}$ feet) in diameter and yellowish, coarse, soft wood, which is not used commercially. This variety differs from the typical species in the tapering trunk and the manner in which the bark peels off. (Adapted from Lillo, *Contribución al Conocimiento de los Arboles de la Argentina*, p. 43.)

44434 and 44435. *PROSOPIS CHILENSIS* (Molina) Stuntz. Mimosaceæ.
(*P. juliflora* DC.) **Algaroba.**

The algaroba is a leguminous tree, native to Argentina, usually 30 to 40 feet tall, with sweetish succulent pods which are fed to cattle. The wood is used for general carpentry.

44434. *Algarroba negro.* A form with dark-colored pods.

44435. *Algarroba blanco.* A form with light-colored pods.

44436. *ZIZIPHUS MISTOL* Griseb. Rhamnaceæ. **Mistol.**

A spiny tree, native of Argentina, up to 30 feet in height, with oval leathery short-stemmed leaves about an inch long and edible black fruits about one-third of an inch in diameter. The hard, red wood is not used commercially. (Adapted from Bailey, *Standard Cyclopædia of Horticulture*, vol. 6, p. 3548, and from Lillo, *Contribución al Conocimiento de los Arboles de la Argentina*, p. 85.)

44437 and 44438.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received March 30, 1917.

44437. *LYCOPERSICON ESCULENTUM* Mill. Solanaceæ. **Tomato.**

"(No. 90a. From Antigua, Guatemala, February 26, 1917.) Seeds of a small native tomato which is commonly grown and used in the high lands of Guatemala as well as in some parts of the low lands. The plants are exceedingly vigorous and productive; the fruits are up to an inch or slightly more in diameter and of good flavor. While I have not seen this plant in the wild state, it is said by the natives to occur as a wild plant." (*Popenoe.*)

44438. *ABUTHION* sp. Malvaceæ.

"(No. 91. From Zacapa, Guatemala, March 15, 1917.) Cuttings of a handsome malvaceous shrub, 6 to 10 feet high, which is abundant in the mountains back of Zacapa at elevations of about 2,000 feet and has also been seen toward Gualan, at a low elevation in the lower Motagua valley. At this season of the year the plants are almost devoid of foliage and are a mass of brilliant yellow flowers. Individually the flowers resemble a single hibiscus, but are slightly smaller, being about 2 inches broad; they are golden yellow in color, with a crimson center. The plants bloom through a considerable period. For trial in southern California and Florida." (*Popenoe.*)

44439. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(P. gratissima Gaertn. f.)

From Guatemala. Budwood collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received January to March, 1917.

"(No. 92. Avocado No. 15.) *Nabal*.¹ For productiveness combined with desirable form and excellent quality of fruit, this variety seems particularly worthy of trial in the United States. While not a large avocado, it is excellent in every way, having a smooth green surface, rich yellow flesh of good flavor, and a seed not unduly large in comparison to the size of the fruit. In addition, it seems to be slightly earlier in season than the average.

"The parent tree was accidentally destroyed in June, 1917, by a laborer who was planting coffee. It stood among coffee bushes in the Finca Santa Lucia, 7a Calle Poniente, near the Alameda de Santa Lucia, Antigua, Guatemala. The soil in this finca is a rich, black, sandy loam of volcanic origin, deep and apparently very fertile. The tree was young, probably not more than 6 or 7 years old. It stood about 25 feet high, with a trunk 6 inches in diameter at the base, branching 10 feet from the ground. The crown was open, scantily branched, with little bearing wood. The young growths were strong, stout, vigorous, and the budwood was excellent, having large, vigorous eyes. The variety should not be difficult to propagate, and the indications are that it will be a good grower, though it is impossible to speak with certainty in regard to this latter point. The wood is rather tough for an avocado.

"The elevation of Antigua, 5,100 feet, is not great enough to insure unusual hardiness in a variety, but it seems reasonable to expect that varieties from this elevation will be as hardy as the average of the Guatemalan race. There is no way of determining whether they are hardier than the average until they are tested in the United States.

"The parent tree did not flower in 1917. Since flowers are nearly always produced at the same time as the spring flush of growth, however, it may be suspected that the flowering season of the variety will be rather late, since the spring growth did not appear this season until the end of March. The heavy crop of fruit produced last year probably prevented the tree from flowering this season. When first examined, in October, 1916, the tree was carrying more than 300 fruits. It ripened this crop—an unusually large one for a tree of such small size, when the size of the fruit is considered—in February and March, 1917, at which time they were all picked. They would probably have remained on the tree until June if they had been allowed to do so.

"The fruit is nearly spherical in form, of convenient size for serving a half fruit as a portion. It weighs 10 ounces or a little more. The surface is smooth, bright green, very attractive in appearance. The skin is sufficiently thick to make the fruit a good shipper and is of the characteristic Guatemalan texture. The flesh is rich yellow in color, quite free from fiber or discoloration, and very rich in flavor. The seed is tight in the cavity and slightly below the average in size. Considered from all points of view, it bears every indication of being an excellent little fruit.

"A formal description of the variety follows:

¹ This and other varietal names for Mr. Popenoe's Guatemalan avocados are arbitrarily selected from appropriate words in the Maya language. It has seemed wiser thus to give these plants names which would indicate the origin of the variety than to give them English names that could convey no hint of the source whence the plants had come.

"Form almost spherical; size below medium, weight about 10 ounces, length $3\frac{1}{2}$ inches, breadth slightly over 3 inches; base scarcely extended, the stem inserted almost squarely without depression; apex rounded, with a slight depression around the stigmatic point; surface undulating to finely pebbled, dull green in color with numerous very minute yellowish dots; skin not very thick, scarcely up to one-eighth of an inch over any portion of the fruit, separating readily from the flesh, woody, brittle; flesh yellow, greenish toward the skin, free from fiber or discoloration, of firm, smooth texture and rich flavor; quality excellent; seed rather small, nearly spherical in form, weighing slightly more than 1 ounce, tight in the seed cavity, with both seed coats adhering closely to the cotyledons." (*Popenoe*.)

44440. PERSEA AMERICANA Mill. Lauraceæ.
(*P. gratissima* Gaertn. f.)

Avocado.

From Guatemala. Budwood collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received March to June, 1917.

"(Nos. 94, 110, 116, 138. Avocado No. 17.) *Nimliah*. It is rare to find a large-fruited avocado which is at the same time very productive. In this variety, however, these two characteristics are both combined to an unusual degree. In addition, the quality of the fruit is excellent, the flesh being rich yellow in color, free from discoloration, and of very rich flavor. The habit of the tree and the character of the wood indicate that the variety may not be a very strong grower.

"The parent tree is growing in a sitio belonging to Trinidad Hernandez, Callejon de Concepción No. 28, Antigua, Guatemala. The elevation is approximately 5,100 feet. The soil is a very sandy loam, black, loose, deep, and undoubtedly very fertile. The tree stands close to the wall, with no other large trees close to it. It is very poorly cared for. Its age is not known, but it is probably 15 years. It is about 25 feet high, the trunk is 14 inches thick at the base, and the first branches 12 feet from the ground. The crown is broadly oval, of good form, and rather dense. It looks, however, as though the variety might be a diffuse grower when young, with long heavy shoots inclined to droop. The wood is unusually brittle, and the budwood very poor, the eyes being stalked or losing their bud scales and falling early. The tree is badly attacked by leaf-gall, and there are a good many scale insects on it.

"The elevation of Antigua, 5,100 feet, is not great enough to insure unusual hardness in a variety, and pending a test in the United States it can only be assumed that this avocado is of about average hardness for the Guatemalan race.

"The flowering season is from the latter part of February to the end of March. According to the owner of the tree, it always bears at least a few fruits, but it is to be expected that a tree which produces such a crop as this one did in 1917 will not bear heavily the following year. While an accurate count was not made, the crop this season was estimated at 300 to 400 fruits. The normal size of the fruit is between 2 and 3 pounds, but owing probably to the large number on the tree many do not develop to a greater size than 1 pound. Probably good culture and thinning would result in a crop of uniformly large fruits. The season of ripening is earlier than some, most of the fruits being fully ripe in February and March.

"In form this avocado is broadly oval, usually somewhat oblique. The surface is deep green and rather rough, while the skin is thick and woody. The

flesh is rich cream yellow in color, smooth and entirely free from fiber or discoloration. The flavor is of the very best, rich, bland, and pleasant. The seed, while large, is not large in comparison to the great size of the fruit, and the proportion of flesh to seed is quite satisfactory.

"Those who are interested in large avocados should by all means give this variety a trial. Its only visible defect is the tendency to produce weak branches, but if pruning and good culture can produce a reasonably shapely and vigorous growth the variety seems likely to prove of great value in the United States.

"A formal description of the fruit follows:

"Form broadly oval, sometimes oblong-oval, and always more or less oblique; size extremely large, perfectly developed fruits weighing 36 to 45 ounces and measuring $5\frac{1}{2}$ to 6 inches in length by $4\frac{1}{2}$ to 5 inches in breadth; stem rather short and very stout, inserted obliquely without depression; base slightly flattened obliquely, not decidedly so; apex rounded to obliquely flattened; surface heavily pebbled in most instances, occasionally lightly pebbled, deep green in color, with numerous irregular, large, yellowish dots; skin moderately thick, one-sixteenth of an inch toward the base of the fruit and one-eighth of an inch toward the apex, separating readily from the flesh, coarsely granular and brittle; flesh firm, oily, smooth, rich cream yellow, tinged with green toward the skin, free from fiber or discoloration and very rich, pleasant flavor; quality excellent; seed medium sized, roundish conic or oblate-conic, weighing 4 ounces, tight in the cavity with both seed coats adhering closely." (*Popenoe.*)

44441 and 44442.

From Tucuman, Argentina. Presented by Mr. E. F. Schultz, horticulturist, Tucuman Experiment Station. Received March 27, 1917.

44441. CAESALPINIA MELANOCARPA Griseb. Cæsalpiniaceæ. **Guayacán.**

"The *guayacán* is a very hard-wooded tree, tall and spreading, with smooth white bark. The heavy lumber is used in the manufacture of heavy 2-wheeled carts and for similar objects. It is also cut for railroad ties and for fence posts, lasting in this capacity 30 years and more. It is frequently difficult to drive nails into even the green wood. The seed pods contain a great deal of tannin and are used for ink manufacture." (*Schultz.*)

44442. ZIZIPHUS MISTOL Griseb. Rhamnaceæ. **Mistol.**

A spiny tree from Argentina, up to 30 feet in height, with oval, leathery, hoary pubescent leaves about an inch long and edible black fruits one-third of an inch in diameter, with large stones. The wood is red and hard, but is not known to be of commercial use.

See S. P. I. No. 40853 for previous introduction.

44443. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Guatemala, Guatemala. Seeds purchased by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Numbered March, 1917.

A collection of seeds sent in for stock purposes.

44444 and 44445. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Antigua, Guatemala. Seeds collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received March 7, 1917. Quoted notes by Mr. Popenoe.

The plants grown from these seeds are not to be budded, but will be distributed as seedlings to those who wish to plant a seedling tree of good parentage on the possibility of obtaining a valuable new variety.

44444. "(No. 88a. From the Finca el Manchen, February 16, 1917.) The variety is very productive. The fruit is pyriform, about a pound in weight, deep purple in color and slightly rough on the surface; the skin is thick and the flesh of deep yellow color and rich flavor. The seed is moderately small, tight in the cavity."

44445. "(No. 89a. Avocado No. 16. From the Finca Santa Lucia, February 16, 1917.) This is a fruit of good large size, with a rather small seed. It is a productive variety, the parent tree, which is about 20 feet high with a slender crown and little fruiting wood, carrying 100 fruits this season.

"Form oblong-spherical; size above medium to large, weight 15 to 17 ounces, length $4\frac{1}{4}$ inches, breadth $3\frac{3}{4}$ inches; base flattened, with the stem inserted slightly to one side in a shallow, flaring cavity; apex obliquely flattened; surface smooth to undulating. deep purple in color, almost shining, with numerous rather large yellowish dots; skin moderately thick, slightly over one-eighth of an inch, coarsely granular, separating readily from the flesh, but very brittle; flesh pale cream color, tinged pale green toward the skin, of mild, pleasant flavor; quality good; seed small in comparison to size of fruit, decidedly oblate, weighing about $2\frac{1}{2}$ ounces, tight in the cavity, with both coats adhering closely. Season February to June."

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Issued March 16, 1922.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED
BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM APRIL 1
TO JUNE 30, 1917.

(No. 51; Nos. 44446 to 44934.)



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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT IN- TRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1917 (NO. 51; NOS. 44446 TO 44934).

INTRODUCTORY STATEMENT.

The period covered by this inventory is that immediately following the entry of America into the great World War, and it is interesting to record the fact that the work of plant introduction carried on by the office was continued without interruption and that during the three months—April, May, and June—489 new introductions were brought in, carefully inspected, held in the detention greenhouses when necessary, and later sent out to experimenters.

The foreign exploration work was more seriously affected, although it had already felt the effects of the war. Nevertheless, during this period Mr. Meyer continued his exploring work under difficulties along the Yangtze River between Hankow and Ichang and Mr. Wilson Popenoe made a study of the seedling avocado varieties of Guatemala, making excursions on horseback to Antigua, the Los Altos region, Amatitlan, Chimaltenango, Solola, and Totonicapam, where he obtained some of the most promising selections of his collection.

The avocado varieties listed in this inventory are the *Panchoy*, an early-ripening variety; the *Benik*, a midseason sort; the *Tumin*, an unusually productive sort with fruit resembling the *Trapp* in shape; the *Kekchi*, a small, very early sort with a long ripening season; the *Mayapan*, which Mr. Popenoe believes is one of the best of all; the *Cabnal*, a variety with a particularly nutty flavor; the *Cantel*, which has a very small seed; the *Pankay*, which he found at an altitude of 8,500 feet, which is more than 1,000 feet above the zone of citrus fruits; and the *Tertoh*, which produces fruits weighing 4 pounds. This collection of selected avocado seedlings was made with the greatest care. Not only has Mr. Popenoe placed on record in this office a description of the exact locality of each original tree from which he took bud wood, but he made a photograph of the tree itself, wherever it was possible, showing its habit of growth and productiveness; a photograph of the fruit, showing its shape and size and the

relation between seed and flesh and the thickness of the skin; and a most careful pomological description of its flavor, texture, and other characteristics, together with notes written in the field as to its probable season of ripening and productivity. In other words, Mr. Popenoe's collection, as it is being sent out to growers for trial, has had eliminated from it about all the chances for disappointment which it is humanly possible to eliminate when a foreign fruit tree is introduced into an entirely new environment. While the season of ripening may change, the degree of frost which it will stand may change, and even the flavor be affected, it is not to be expected that any great changes in the form of the fruit or in the proportion of seed to flesh will appear in his collection when the fruits ripen in the United States. The difficulty which nurserymen and growers find in handling the cumbersome numbers under which the plants of this office are sent out made it appear necessary to assign names to the various seedlings. In order to do honor to the people from whose country they came and to distinguish them as emigrants from that country, selected names were taken from the Maya language. To this race belongs the distinction of having learned the value of the hard-skinned avocado, and it seems proper that as these Guatemalan varieties become commercially grown in this country they should be called by these Maya names rather than by Americanized names which have no real philological significance. It is believed that these names will enrich rather than impoverish the language of that commerce which is growing up about this important food plant. See *Persea americana*, Nos. 44625 to 44628, 44679 to 44681, 44781 to 44783, 44785, and 44856.

While looking for varieties of the avocado, Mr. Popenoe found a very rare species of *Persea* known as the *coyó* or *shucte* (*Persea schiedeana*, No. 44682) which deserves to be introduced into all strictly tropical countries. In its wild state and without any attempts having been made at its domestication, it appears to have seedlings which rival the avocado in the size of their fruits and in the quality of these fruits for the table. It seems to have been completely overlooked by the tropical botanic gardens of the world.

Mr. Popenoe also obtained material of the following: The tortoise-shell custard-apple (*Annona testudinea*, No. 44774) which bears fruit with large seed, hard shell, and flesh that is devoid of all grittiness; the monkey-flower tree (*Phyllocarpus septentrionalis*, No. 44775), a species which, according to the explorer, compares in beauty with the royal poinciana and produces in January a mass of crimson-scarlet flowers; the lignum-vitæ (*Guaiaecum guatemalense*, No. 44858), which as a small tree with evergreen foliage has already attracted attention in Florida and which, according to Mr. Popenoe,

has "attractive lavender-purple flowers distinguishable for long distances across the plains"; and a wild cherry (*Prunus salicifolia*, No. 44885) of the Guatemalan highlands, which bears fruits three-fourths of an inch in diameter, with a flavor suggesting the Bigarreau cherry. The facts that this cherry produces its fruits in racemes and that the individual fruits are of such unusual size suggest that it be tried in crosses with the chokecherries of the northern United States.

The desire persists in the Tropics for a tropical grape of good quality, and possibly the callulos (*Vitis* sp., No. 44921), which has unusually large berries in a solid bunch and which has shown itself adapted to cultivation in Florida, may contribute toward that end.

Of seeds and plants which have come in as a result of the interest of foreigners or have been imported through correspondence, the following merit mention in this statement:

The guabiroba (*Compomanesia fenziiana*, No. 44784), a fruit tree of which a new quantity of seed has been sent in from Lavras, Brazil, by Mr. Hunnicutt, was first brought to this country by Messrs. Dorsett, Shamel, and Popenoe in 1914. Three-year-old trees of it which were standing in the plant-introduction garden at Miami were not injured by the freeze of 1917 and have already flowered. This shows promise of becoming a valuable fruit plant where it can be grown.

Consul Dawson, of Rosario, has sent in the seeds of a bitter variety of corn (*Zea mays*, No. 44564) which has proved of interest to those sections of Argentina which are overrun by locusts or grasshoppers, owing to the fact that the leaves are so bitter that these insects will not eat it unless there is nothing else to devour. Although the variety is a poor yielder and the corn itself is not immune to the attacks of the locusts, is it not possible that so striking a character as that of bitterness might be valuable in breeding work for the purpose of producing varieties of corn immune to various insects and fungous diseases?

It is a curious coincidence that the highbush cranberry of the Northwestern States and the Kansu viburnum (*Viburnum kansuense*, No. 44547) should both be used for the making of preserves. In the improvement of our native species (*V. americanum*), may not the Chinese species be of value?

The susceptibility of one of our best ornamental bushes, the barberry, to the wheat rust and the fact that the various species of barberries cross easily make it a problem of not a little importance to get the various species of these shrubs together and by crossing them to produce superior forms. The existence of hardy evergreen forms and of forms with seedless fruits can not but add to the possi-

bilities of the situation. As these shrubs are among the most hardy known, as they are very heavy bearers, and as some of the varieties are seedless, a large-fruited seedless variety which could be used for jam production might not be so unimportant as it would seem at first thought (*Berberis* spp., Nos. 44523 to 44530).

Through the Central Experimental Farm of Ottawa, Ontario, a remarkable collection of new selected seedling varieties of apples (Nos. 44713 to 44720) has been introduced. Five of them are seedlings of the well-known Wealthy variety, which, because of the hardiness of the trees and the most excellent eating qualities of the fruit, deserve especial attention by our horticulturists in the northern tier of States.

In connection with the search for a species of the genus *Pyrus* which might prove immune to the pear-blight, is it not possible that the closely related genus *Docynia*, of which the species *D. delavayi* occurs in western Szechwan and also in Yunnan, might furnish such a species and at the same time prove a suitable stock for the cultivated pear? E. H. Wilson photographed a tree which was 25 feet tall and 7 feet in circumference and reports it to bear edible fruits 1 inch long. No. 44677 represents seeds of this species sent in by Mr. Frank Pilson, but it can be easily grown from cuttings.

The existence of delicious-fruited hybrids between the cherimoya and the sugar-apple, produced independently by Wester in the Philippines and by Simmonds in Florida, and the fact, according to Pittier, that these hybrids occur in Venezuela and are recognized as distinct from the ordinary cultivated anonas, make the production by Wester of a hybrid which represents three species (Nos. 44671 to 44673) of special interest. The large number of related species and the fact that so many of them have edible fruits and that, as orchard trees, they bear early would seem to single out this family, Annonaceæ, as one particularly favorable for the plant breeder's work. The biribá of Brazil, *Rollinia mucosa* (Nos. 44658 and 44659), is another species introduced for the breeders of this family.

The great beauty of the different species of *Styrax* for use as shrubs around the dooryard, where they follow in their flowering habit the early-flowering shrubs like the lilac and spirea, will make the collection (*Styrax* spp., Nos. 44591 to 44595) imported from Chenault & Sons, Paris, welcome to nurserymen.

Dr. E. D. Merrill, of the Department of Agriculture of the Philippine Islands, has sent in a remarkable species of ornamental *Ficus*, *Ficus pseudopalma* (No. 44470), from Corregidor, which, because of its resemblance to a slender-stemmed palm, is known as the little coconut. It has a crown of leaves which are nearly a meter in length.

In the Coachella Valley the most rapidly growing species of tree is a North African tamarisk (*Tamarix aphylla*). It makes so remarkable a growth there that trees $2\frac{1}{2}$ years old have a girth of 3 feet a foot above the ground. Dr. Trabut sends with the seed of this species (No. 44554) the information that a mite (acarian) in the Sahara produces galls on the tree which contain as high as 45 per cent of pyrogallic tannin; and the suggestion of the use of this remarkable tree as a source of tannin is perhaps allowable.

Though the parkways are often lined with what is called *Catalpa bungei*, in reality a form of *C. bignonioides*, the true *C. bungei* is a very rare tree in this country. Mr. Frank N. Meyer pointed out some years ago that it had unusual promise as a timber tree for the semi-arid regions of the Southwest along irrigating ditches. It grows to a height of 100 feet; its timber resembles walnut and is in great demand for table tops and furniture because of its nonwarping character. It is extensively planted by the Chinese. (No. 44664.)

Without raising the question of the landscape value of the common *Casuarina equisetifolia*, which has been planted by millions along the roadways of southern Florida, the doubtful hardiness of that species as contrasted with at least one of the other species (*C. cunninghamiana*) has made it advisable to secure the other members of this genus, and No. 44909 (*C. stricta*) and No. 44532 (*C. cunninghamiana*) are recorded in this inventory. If they prove to be hardier than *C. equisetifolia*, a good deal will be gained.

There seems to be some advantage in the use of certain kinds of melons in the making of preserves, especially types which have rinds containing large amounts of pectose. The Mankataan melon of Natal, *Citrullus vulgaris* (No. 44842), which will keep six months and is used extensively in Cape Colony for preserving, is worth the attention of housekeepers.

So many valuable grasses have come from South Africa and Australia that a species on which sheep pasture at altitudes of 6,000 feet near Pretoria, *Panicum serratum* (No. 44518), and the meadow rice-grass of Australia and New Zealand, *Microlaena stipoides* (No. 44802), which is said to bear overstocking better than any other grass native there, are worth trying on the high-altitude pastures of the Pacific slope, where a ground cover which will hold moisture is so much needed.

We are so accustomed to connecting the flavor of onions with a round-bladed species of bulbous plant that Dr. Trabut's newly domesticated *Allium triquetrum*, with triangular leaves, strikes one as remarkable. The onion odor is scarcely perceptible in it, although as a vegetable it is very delicate indeed (No. 44793).

The demand for large-fruited varieties of olives for pickling purposes may make the Tafahi olive (No. 44709) from the Fayum Oasis of Egypt peculiarly interesting to olive growers, for it is 4.5 cm. long and 3 cm. in shorter diameter, according to Prof. S. C. Mason, who arranged for its introduction.

It is a curious fact that in Great Britain black currants are looked upon as a delicacy, while in America little or no attention is paid to this fruit, although it is peculiarly adapted to cultivation in the extreme North. Collections of black and red currants are represented in this inventory under Nos. 44475 to 44499, 44581 to 44587, 44638 to 44648, 44706, 44707, and 44904.

The Chinese grafted jujube has reached a stage in this country where it will soon go on a commercial basis, but the investigation of all the other forms of the jujube which are to be found in the world should go on, and the tropical species from Khartum, *Ziziphus mucronata* (No. 44748), may be of value.

The question whether it would ever be profitable to cultivate the species of *Acacia* which yield the gum arabic of commerce is one which can hardly be expected to be answered a priori. The fact that to-day the Brazilian sources of Para rubber have sunk into insignificance in comparison with the plantation rubber from the cultivated Para rubber trees in the East Indies should certainly make advisable an investigation of the possibilities of desert plantations of these gum-producing plants. For this purpose two of the African gum acacias have been introduced (Nos. 44922 and 44923).

The new problem of growing chestnuts in orchards, which the chestnut bark disease has brought up, has attracted attention to the smaller species of oriental chestnut trees, such as *Castanea mollissima*, and to the hybrids between our chinkapin and the Japanese chestnut. Is it not possible that a dwarf species of the related genus *Castanopsis* may have value in this breeding work? Seeds of this species, *Castanea mollissima* (No. 44448), from Nanking, have been sent in by Rev. Joseph Bailie, of Nanking, who has just had the distressing experience of being beaten nearly to death by Chinese bandits while at work to help the Chinese establish a better forest policy.

The introduction by Mr. H. M. Curran of a species of cactus, *Cephalocereus lanuginosus* (No. 44454), from Curaçao, which has attractive red fruits, brings up the whole question of the utilization of the fruits of the *Opuntias* in this country. With thousands of acres in California where the best fruit-bearing varieties will grow to perfection and with hundreds of people in the Eastern States who have been accustomed from their childhood in the Mediterranean region to eat the "fico d'India," it seems unfortunate that a method has not been devised for the removal of the small spicules which are

invariably scattered in pustules over these fruits. Such a discovery, it would seem, would raise a perfectly good, wholesome, and perhaps even medicinal fruit from a state of local consumption to one in which it could compete with other fruits in the world market. It has as remarkable keeping qualities as any fruit known. Specimens have been kept successfully in cold storage for over a year.

The botanical determinations of seeds introduced have been made and the botanical nomenclature revised by Mr. H. C. Skeels and the descriptive and botanical notes arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory, as of all the publications of this office. The manuscript has been prepared by Mrs. Ethel M. Kelley.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., December 24, 1919.

INVENTORY.¹

44446. OPUNTIA MONACANTHA (Willd.) Haw. Cactaceæ.

From Singapore, Straits Settlements. Cuttings presented by Mr. I. Henry Burkill, director, Botanic Gardens. Received April 2, 1917.

"*Opuntia monacantha* is the only species of its genus which has established itself wild here, and that only very sparingly." (*Burkill.*)

"An upright, branching cactus, native of Argentina, reaching a height of 6 feet or more, with rather thick, oblong, flat joints 5 to 12 inches long; areoles furnished with yellowish brown bristles; and one or two erect, yellow or brown spines up to 1½ inches long in each fascicle. The yellow flowers are about 3 inches wide, and the red, spiny, pear-shaped fruits are sometimes proliferous." (*J. N. Rose.*)

44447. OMPHALOPHTHALMA RUBRA Karst. Asclepiadaceæ.

From Curaçao, Dutch West Indies. Collected by Mr. H. M. Curran. Received April 2, 1917.

"*Mari poni poen.* Green fruit, cooked as a vegetable." (*Curran.*)

A climbing shrubby, hairy plant, native of the island of St. Martin, West Indies, with opposite long-petioled, heart-shaped leaves nearly 3 inches long and dark-purple, rather small flowers in the axils of the leaves. (Adapted from *Karsten, Florae Columbiae, vol 2, p. 119, pl. 163.*)

44448 and 44449.

From China. Presented by Rev. Joseph Bailie, University of Nanking, Nanking. Received April 2, 1917.

44448. *CASTANEA MOLLISSIMA* Blume. Fagaceæ.

Chestnut.

"Chestnuts from the capital of Anhwei." (*Bailie.*)

44449. *CASTANOPSIS* sp. Fagaceæ.

Chestnut.

"Dwarf chestnuts from the country near Anchin, Province of Anhwei." (*Bailie.*)

44450. LAGENARIA VULGARIS Seringe. Cucurbitaceæ.

Gourd.

From San Juan Bautista, Tabasco, Mexico. Presented by Mr. Gabriel Itié, director, Agricultural Experiment Station. Received April 3, 1917.

"Known under the native name of *hux*. The very large fruit is used as a containing vessel." (*Itié.*)

¹ All introductions consist of seeds unless otherwise noted.

44451 to 44468.

From Curaçao, Dutch West Indies. Collected by Mr. H. H. Curran. Received April 3, 1917. Quoted notes by Mr. Curran.

- 44451.** ABELMOSCHUS ESCULENTUS (L.) Moench. Malvaceæ. **Okra.**
(*Hibiscus esculentus* L.)

"*Ciamko*. A malvaceous plant, the green seed pods of which are cooked as a vegetable and are very palatable, having a slight mucilaginous quality." (See S. P. I. No. 37806.)

- 44452.** ACACIA VILLOSA (Swartz) Willd. Mimosaceæ.

"*Watapaana sjimaron*. Markets at Willemstad, March 9, 1917."

A thornless shrub, native to Curaçao, Dutch West Indies, with pinnate leaves composed of 10 to 15 pairs of leaflets, each about 5 cm. (2 inches) long, flower heads in a curtainlike inflorescence, and flat, dry, brown pods. The natives call it *Mata galienja* and *wild dividivi*. (Adapted from *Boldingh, Flora voor de Nederlandsch West Indische Eilanden*, p. 206.)

- 44453.** ANNONA MURICATA L. Annonaceæ. **Soursop.**

"*Sorsaaka*. Edible fruit. March 9, 1917."

"A small, evergreen, tropical American tree, about the size of a peach tree, with leathery, ill-smelling, glossy leaves, large flowers with fleshy petals, and very large, fleshy, green fruits often as large as a child's head and weighing as much as 5 pounds, containing white, juicy, pleasantly subacid pulp. It is commonly cultivated in the Tropics of the Old World. A fine drink is made from the juice, and the pulp makes excellent jelly and preserves. It is easily propagated from seeds or by budding." (*W. E. Safford*.)

- 44454.** CEPHALOCEREUS LANUGINOSUS (L.) Britt. and Rose. Cactaceæ.

"*Kadoesji*. Edible fruit. March 9, 1917."

"An upright, columnar, unbranched West Indian cactus, up to 6 cm. (2½ inches) in diameter, with eight or nine ribs, round areoles covered with brown wool which turns gray and finally disappears, and two kinds of spines borne in the areoles. The 8 to 10 radial spines are up to 2 cm. (four-fifths of an inch) in length, and the central spines, up to four in number, are reddish brown and about 3.5 cm. (1½ inches) long. The flowers are about 5 cm. (2 inches) long, funnel shaped, with green sepals and red-margined petals. The nearly globular, soft, fleshy red berry is about 3.5 cm. (1½ inches) in diameter, filled with shining black seeds. (Adapted from *Schumann, Gesamtbeschreibung der Kakteen*, p. 183, as *Pilocereus lanuginosus*.)

- 44455.** COCCOLOBIS DIVERSIFOLIA Jacq. Polygonaceæ.

"*Kawaalia*. Edible fruit. March 9, 1917."

A small West Indian tree. 8 or 10 feet high, with greenish brown branches; bright-green, leathery, smooth, shiny leaves which are very variable in shape; white, inconspicuous flowers in spikes 4 to 6 inches long; and round, purple-fleshed drupes about the size of a small cherry. The natives eat the fruits, but the flavor is not very pleasant. (Adapted from *W. J. Hooker, Exotic Flora*, vol. 2, pl. 102.)

44451 to 44468—Continued.

44456. HAEMATOKYLUM BRASILETTO Karst. Cæsalpiniaceæ.

"*Brazieja*." A small tree, native of the Dutch West Indies, with stout thorns on the outer branches, compound leaves composed of three or four pairs of notched leaflets up to 3.5 cm. (1½ inches) long, with a thorn at the foot of each leafstalk, short clusters of flowers, and flat pods. (Adapted from *Boldingh, Flora voor de Nederlandsch West Indische Eilanden*, p. 212.)

44457. HOLCUS SORGHUM L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

"*Maiz chikitoë hasen harina*."

44458. MALPIGHIA PUNICIFOLIA L. Malpighiaceæ.

"*Sjimaroeke*. Edible fruit, March 9, 1917."

A shrub, native to the Dutch West Indies, about 12 feet high, with smooth, oval leaves 4 cm. (1½ inches) long, flowers in the axils of the leaves, and edible stone fruits. In some of the islands this is called *cherry*. (Adapted from *Boldingh, Flora voor de Nederlandsch West Indische Eilanden*, p. 239.)

44459. PHASEOLUS LUNATUS L. Fabaceæ.

Lima bean.

"Markets of Willemstad, March 9, 1917."

44460. PHASEOLUS VULGARIS L. Fabaceæ.

Common bean.

"*Boonchi pintado*. Markets of Willemstad, March 9, 1917."

44461. RANDIA ACULEATA L. Rubiaceæ.

"*Leele*." A dwarfish, gray-barked West Indian shrub with roundish, shining green leaves; white, solitary, sessile flowers; and globose fruits which yield a fast-blue dye, giving rise to the Jamaica name of *indigo-berry*. Propagation is by cuttings. (Adapted from *Curtis's Botanical Magazine*, vol. 43, pl. 1841, as *Gardenia randia*.)

44462. SESAMUM ORIENTALE L. Pedaliaceæ.

Sesame.

(*S. indicum* L.)

"*Sjosjole*. Markets of Willemstad, March 9, 1917."

44463. PHASEOLUS SEMIERECTUS L. Fabaceæ.

"A leguminous plant, common in lowlands at St. Joris. April 9, 1917."

44464 to 44468. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

44464. *Boonchi di Baliza*. Markets of Willemstad, March 10, 1917. Edible bean."

44465. "*Boonchi di color* No. 1. Markets of Willemstad, March 9, 1917."

44466. "*Boonchi di color* No. 2. Markets of Willemstad, March 9, 1917."

44467. "*Boonchi di color* No. 3. Markets of Willemstad, March 9, 1917."

44468. "*Boonchi di color* No. 4. Markets of Willemstad, March 9, 1917."

44469. AMARANTHUS PANICULATUS L. Amaranthaceæ. Alegria.

From San Juan Bautista, Tabasco, Mexico. Purchased from Mr. Gabriel Itié, director, Agricultural Experiment Station. Received April 3, 1917.

Alegria is produced in Tlajomulco, Zacoalco, and San Pedro Tlaquepaque, districts belonging to the State of Jalisco. This annual is sown in nurseries; in the month of December it is harvested and is used in the making of sweets. I was told the seeds in question are found with difficulty in the pueblos near Guadalajara, for the inhabitants do not put them to any practical application; and, if they are sometimes used, it is when they are mixed with dulce for children. They are surely very insipid. [These seeds are sold in Mexico City, and] they are also seen in the State of Michoacan, where they are used for the same purpose." (*Itié.*)

44470. FICUS PSEUDOPALMA Blanco. Moraceæ.

From the Philippine Islands. Presented by Dr. E. D. Merrill, acting director, Bureau of Science, Manila. Received April 5, 1917.

"A single fruit of *Ficus pseudopalma*, which apparently has fertile seeds. This fruit was recently sent to me from Corregidor. The species is a most striking ornamental and will probably thrive out of doors in southern Florida and in southern California; it is well worthy of cultivation in greenhouses. The stems are erect, unbranched, and usually about 3 cm. in diameter. The stem is tipped by a dense crown of very characteristic leaves which are sometimes nearly a meter in length. The fruits are borne in the leaf axils. On account of its palmlike aspect Blanco selected the name *pseudopalma*; the common Tagalog name is *niogniogan*, which literally means 'little coconut.'" (*Merrill.*)

44471 to 44473.

From Granada, Spain. Plants purchased from the Pedro Giraud Nurseries, through Mr. Percival Gassett, American consul, Malaga. Received April 7, 1917.

44471 and 44472. FICUS CARICA L. Moraceæ.

Fig.

44471. "*Albanes*, the name by which the *Paharero* fig is here known." (*Gassett.*)

44472. "*Isabeles*, the most delicious fig, much sought after." (*Gassett.*)

44473. PYRUS COMMUNIS L. Malaceæ.

Pear.

Peraleta. A dwarf variety of the common pear.

44474. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. Watermelon.

From Lusambo, Belgian Kongo, Africa. Presented by Mr. E. B. Stilz. Received April 10, 1917.

"Seed of a native watermelon. It grows here like a weed; the vine is almost exactly like that of the cultivated watermelon, only not quite so fuzzy. The fruit also resembles a watermelon, being green and about the size of a man's head when ripe. The rind is very tough and the meat is white and stringy and about as fit to eat as that of a gourd. It has the watermelon smell, however. I do not know whether it is the ancestor or a degenerate descendant of our watermelon." (*Stilz.*)

44475 to 44499. RIBES spp. Grossulariaceæ.**Currant.**

From Angers, France. Plants purchased from the André Leroy Nurseries.
Received April 11, 1917.

44475 and 44476. RIBES VULGARE Lam.**Garden currant.**44475. No. 1. *Belle de St. Gilles.*44476. No. 3. *De Boulogne blanc.* (Boulogne white.)**44477 to 44480. RIBES NIGRUM L.****Black currant.**44477. No. 4. *Cassis à fruit noir.* (Black-fruited currant.)44478. No. 6. *Cassis à fruit brun.* (Brown-fruited currant.)44479. No. 5. *Cassis à feuilles dorées.* (Golden-leaved black currant.)4480. No. 11. *Cassis Royal de Naples.* "Neapolitan. Medium-sized, spicy berries." (*Hesse's catalogue.*)**44481 to 44499. RIBES VULGARE Lam.****Garden currant.**44481. No. 12. *Du Caucase.* "Caucasian. Bunches of medium length, currants very large, a prolific shrub. A good table fruit for the home garden." (*Späth's catalogue.*)44482. No. 14. *Cerise blanche.* (White cherry.)44483. No. 15. *Chenonceau rouge.* "A good table fruit with large berries." (*André Leroy's catalogue.*)44484. No. 16. *Commun à fruit blanc.* (Common white fruited.)44485. No. 17. *Commun à fruit rouge.* (Common red fruited.)44486. No. 18. *Fay's New Prolifia.* "Very long bunches with very large berries." (*André Leroy's catalogue.*)44487. No. 19. *Fertile d'Angers.* (Angers prolific.)44488. No. 20. *Fertile de Bertin.* "A heavy-bearing variety with clear red, medium-sized berries." (*Hesse's catalogue.*)44489. No. 22. *Frauendorf.*44490. No. 23. *Gloire des Sablons.*44491. No. 24. *Grosse blanche transparente.* (Large transparent white.)44492. No. 27. *De Hollande à longue grappe.* (Long-bunch Dutch.)44493. No. 28. *Impériale blanche.* (Imperial white.)44494. No. 29. *Impériale rouge.* (Imperial red.)44495. No. 30. *Knight.* "Knight's red, with very large red berries." (*Hesse's catalogue.*)44496. No. 31. *La Turinoise.*44497. No. 35. *Versaillaise.*44498. No. 33. *Rouge clair de Buddins.* (Bunddins' clear red.)44499. No. 34. *De Verrières.***44500 to 44517. Fabaceæ.**

From Yih sien, Shantung Province, China. Presented by Rev. R. G. Coonradt. Received April 10, 1917. Quoted notes by Mr. Coonradt.

44500. DOLICHOS LABLAB L.**Bonavist bean.**

"No. 9. Used for cooking."

44500 to 44517—Continued.44501 to 44505. *PHASEOLUS* spp.44501 and 44502. *PHASEOLUS ANGULARIS* (Willd.) W. F. Wight.**Adsuki bean.**

44501. "No. 13. Small red bean; used for soup."

44502. "No. 16. Small white bean; used for boiling."

44503 to 44505. *PHASEOLUS AUREUS* Roxb.**Mung bean.**

44503. "Hairy green bean; used for soup. Planted in June."

44504. "No. 7. Smooth green bean; used in soup. Planted in June."

44505. "No. 8. Smooth brown bean; used for soup. Planted in June."

44506. *PISUM SATIVUM* L.**Garden pea.**"No. 1. *Wan*; large winter pea. Planted in November."44507 to 44513. *SOJA MAX* (L.) Piper.**Soy bean.**(*Glycine hispida* Maxim.)

44507. "No. 2. Large red bean; used for baking or boiling. Planted in the spring."

44508. "No. 3. Large black bean; used for baking and boiling. Planted in the spring."

44509. "No. 4. Large yellow bean; used for baking and boiling. Planted in the spring."

44510. "No. 5. Large blue bean; used for baking and boiling. Planted in the spring."

44511. "No. 11. Small yellow bean; used for oil curd and animal feed."

44512. "No. 12. Tea-colored bean; used for animal feed. Planted in June."

44513. "No. 17. Used for soup."

44514. *STIZOLOBIUM PACHYLOBIUM* Piper and Tracy.

"No. 9. Beans used for cooking."

44515. *VIGNA SESQUIPEDALIS*. (L.) Fruwirth.**Yard Long bean.**

"No. 10. Horned bean."

44516 and 44517. *VIGNA SINENSIS* (Torner) Savi.**Cowpea.**44516. "No. 14. Large *Chiang* bean; used for soup and boiling."44517. "No. 15. White *Chiang* bean; used for soup and boiling."**44518. *PANICUM SERRATUM* (Thunb.) Spreng. Poaceæ. Grass.**

From the Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture, Pretoria. Received April 12, 1917.

"Collected at Kaalfontein, near Pretoria. This grass flourishes on our high veld (4,000 to 6,000 feet) in this neighborhood and is much relished by sheep and cattle." (*Evans.*)

44519. *POUPARTIA AXILLARIS* (Roxb.) King and Prain. Anacardiaceæ.

From Augusta, Ga. Plants purchased from P. J. Berckmans Co. Received April 13, 1917.

A rather common tree at low altitudes in the valleys of western China, growing to a height of 15 to 25 m. (50 to 80 feet) and having a trunk often 3 feet in diameter near the base. It has gray bark, massive branches, deciduous leaves, and inconspicuous flowers. The yellow, oval fruits, which are about an inch long, are eaten by the Chinese, who call the tree *Hsuan tsao*. Known also as *Spondias axillaris*. (Adapted from *Sargent, Plantae Wilsonianae*, p. 172, 1914.)

44520 to 44549.

From Ventimiglia, Italy. Presented by the superintendent, La Mortola Botanic Gardens. Received April 6, 1917.

44520. ALECTRYON SUBCINEREUM (A. Gray) Radlk. Sapindaceæ.

A shrub or small tree, native to New South Wales, Australia, with compound leaves composed of one to three pairs of shining, oblong or lance-shaped leaflets 2 to 4 inches long, very small flowers in short axillary panicles, and 2 to 3 lobed capsules which inclose globose seeds with fleshy arils. (Adapted from *Gray, U. S. Exploring Expedition*, vol. 15, *Botany*, p. 258, as *Cupania subcinerea*.)

44521. ALECTRYON TOMENTOSUM (F. Muell.) Radlk. Sapindaceæ.

An Australian tree, 20 to 30 feet high, with rusty velvety young branches, small flowers crowded in woolly panicles, and rather hard, depressed, indehiscent fruits. (Adapted from *Bentham, Flora Australiensis*, vol. 1, p. 466.)

44522. ALOË SUCCOTRINA Lam. Liliaceæ.

Aloe.

A succulent herbaceous plant, native to Africa, usually simple but sometimes branched, with thick, linear or lance-shaped leaves with shiny margins and tips, disposed in the form of a rosette, either green or yellowish in color. The red flowers are borne in a spike. The juice is evaporated to obtain a drastic purgative known as *aloes*. This plant is cultivated in South America and many other subtropical places. (Adapted from *Loefgren, Notas sobre as Plantas Exoticas Introduzidas no Estado de S. Paulo*, p. 27.)

44523 to 44530. BERBERIS spp. Berberidaceæ.

Barberry.

44523. BERBERIS ACTINACANTHA Mart.

An evergreen bush, native to the mountainous regions of Chile, with peculiar 5-parted spines, roundish oval, rigid, spiny-dentate leaves, and deep-yellow, sweet-scented flowers. In cultivation it reaches 3 to 4 feet in height and grows freely in a rich sandy loam. (Adapted from *Edward's Botanical Register*, vol. 31, pl. 55.)

44524. BERBERIS GLOBOSA Benth.

A spiny shrub, native to the Andes of Colombia, 6 to 8 feet high, with rigid, mucronate leaves a little more than an inch long and a quarter of an inch wide, yellow flowers a little larger than those of the common barberry, and globular fruits about the size of a small pea. (Adapted from *Bentham, Plantae Hartwegianae*, p. 158.)

44525. BERBERIS GUIMPELI Koch and Bouche.

A shrub, 5 to 7 feet in height, native to the Caucasus, with clustered obovate entire leaves, racemes of early-blooming yellow flowers, and attractive red berries appearing in autumn. It needs a sunny

44520 to 44549—Continued.

situation for best results. (Adapted from *Guimpel, Abbildung der fremden in Deutschland ausdauernden Holzarten*, p. 79, as *B. canadensis*.)

44526. BERBERIS ILICIFOLIA Forst.

A straggling bush, native to Tierra del Fuego, Argentina, about 8 feet in height, with yellow-brown young wood, angular stems, 3-parted often curved spines, dark-green hollylike leaves, flowers in axillary racemes, and deep steel-blue subglobose fruits. (Adapted from *Curtis's Botanical Magazine*, vol. 73, pl. 4308.)

44527. BERBERIS PRATTI C. Schneid.

A western Chinese shrub 6 to 10 feet high, with finely hairy grooved young twigs; slender, 3-parted spines up to two-thirds of an inch long; ovate leaves up to $1\frac{1}{2}$ inches long in fascicles of four or five; yellow flowers in narrow panicles; and ovoid salmon-red fruits a quarter of an inch in length. It grows very freely and is quite hardy in cultivation at Kew, England. (Adapted from *Curtis's Botanical Magazine*, vol. 140, pl. 8549.)

44528. BERBERIS SARGENTIANA C. Schneid.

A black-berried barberry from western Hupeh, China, reaching a height of 7 feet. It is the only evergreen barberry which has proved entirely hardy at the Arnold Arboretum. (Adapted from *Sargent, Plantae Wilsonianae*, vol. I, p. 359.)

For further description, see S. P. I. No. 42973.

44529. BERBERIS SUBCAULIALATA C. Schneid.

A thickly branched shrub from Tibet, up to $4\frac{1}{2}$ feet high, with spines up to an inch in length, finely membranaceous, lance-shaped leaves about an inch long, and reddish yellow globular fruits a quarter of an inch in diameter. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 2, p. 919.)

44530. BERBERIS VIRESCENS Hook. f.

This Himalayan barberry is a spreading shrub with shining brown bark; ovate, pale-green, spiny toothed leaves in tufts; slender 3-parted thorns; small greenish yellow flowers in fascicles or short racemes; and oblong or constricted scarlet or black berries. (Adapted from *Curtis's Botanical Magazine*, vol 116, pl. 7116.)

44531. BUDDLEIA DAVIDII Franch. Loganiaceæ.

A tall shrub, native to the mountainous parts of northern China, with very variable foliage. The opposite dark-green leaves are 4 inches to a foot in length, oblong or narrowly lance shaped, and either coarsely serrate or entire. The clear lilac-colored flowers are crowded in dense heads 4 to 6 inches long, and the fruits are clavate capsules about a quarter of an inch long. (Adapted from *Curtis's Botanical Magazine*, vol. 124, pl. 7609, as *Buddleia variabilis*.)

44532. CASUARINA CUNNINGHAMIANA Miquel. Casuarinaceæ.

An Australian tree 30 to 40 feet high, with slender branches, male flowers in slender spikes, and globular fruiting cones not more than a third of an inch in diameter. The wood is dark colored, close grained, and prettily marked. (Adapted from *Bailey, Queensland Flora*, pt. 5, p. 1491.)

44520 to 44549—Continued.

44533. CLERODENDRUM TRICHOTOMUM FARGESII (Dode) Rehder. Verbenaceæ.

A Chinese shrub, 3.5 to 4 meters (10 to 15 feet) in height; with dark-green, oval, lance-shaped leaves, 10 to 15 cm. (4 to 6 inches) long; very fragrant light-pink flowers in axillary cymes; and dark-purple drupes, 4 to 5 mm. (one-fifth of an inch) in diameter, with very hard, black seeds. It is easily raised from seed in ordinary soil. (Adapted from *J. Pinelle, in Revue Horticole, vol. 83, p. 522, as Clerodendron fargesii.*)

44534. ARECASTRUM ROMANZOFFIANUM (Cham.) Becc. Phœnicaceæ.
(*Cocos romanzoffiana* Cham.) **Palm.**

Var. *plumosa*. "A Brazilian palm, commonly cultivated in Florida and California as an ornamental, with an unarmed trunk about 30 feet high and a foot in diameter, bearing a crown of plumelike pinnate leaves 12 to 15 feet long. It has two spathes, the inner somewhat woody, splitting along one side and exposing the much-branching spadix which is crowned with the monœcious flowers. The fruit is a pale-orange drupe about the size of a large acorn, inclosing a bony seed which has three eyes near the base." (*C. B. Doyle.*)

44535. DIOSPYROS LOTUS L. Diospyraceæ.

A deciduous Chinese tree, usually less than 30 feet high in cultivation in temperate countries, but probably twice as high in warmer climates. It has oval, shining dark-green leaves 2 to 5 inches long, greenish red diœcious flowers, the pistillate solitary and the staminate one to three in a cluster. The purplish or yellowish, orange-shaped fruits are half an inch to three-quarters of an inch across, but because of their astringent quality are unfit for food. On damp days the trees emit a curious heavy odor, probably due to an exhalation from the leaves. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 494.*)

Ordinarily used in China and Japan as a stock for the kaki, or Japanese persimmon.

44536. DODONAEA THUNBERGIANA Eckl. and Zeyh. Sapindaceæ.

A South African shrub, 5 to 10 feet high, with somewhat viscid, narrow leaves $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long and a quarter of an inch wide, dense racemes of polygamous green flowers, and resinous, shining, winged capsules about half an inch long and wide. A decoction of the root is used as a purgative in fevers. (Adapted from *Harvey and Sonder, Flora Capensis, vol. 1, p. 242.*)

44537. LONICERA STANDISHII Carr. Caprifoliaceæ. **Honeysuckle.**

A charming, fragrant, early-flowering, deciduous, Chinese shrub, with pale yellowish brown branches; pale-green, oval to lance-shaped leaves 3 to 5 inches long; and white, sweet-scented flowers appearing in pairs, one-fifth to half an inch long. (Adapted from *Curtis's Botanical Magazine, vol. 94, pl. 5709.*)

44538. PRUNUS CONRADINAE Koehne. Amygdalaceæ. **Cherry.**

A graceful tree from central China, reaching a height of 25 feet, with oval or oblong, doubly serrate leaves 2 to 6 inches long; whitish or pink flowers about three-quarters of an inch long in two to four flowered umbels, and red ovoid fruits one-third to one-half an inch long. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 5, p. 2840.*)

44520 to 44549—Continued.

44539. *PRUNUS TOMENTOSA* Thunb. Amygdalaceæ.

Cherry.

A broad, vigorous shrub from northern China. One of the earliest cherries to flower. The flowers are large, with the white petals more or less tinged with red toward the base, and the small, bright-red, slightly hairy fruits are of good flavor. It is now being cultivated in the northwestern part of the United States and in southwestern Canada where other cherries are not hardy. (Adapted from the *Arnold Arboretum Bulletin of Popular Information No. 19, April 25, 1912.*)

This fruiting shrub thrives under a very wide range of climatic conditions, from those of Georgia and southern California to those of Montana and the plains of Canada. Its attractive berries have been used successfully in the production of excellent preserves. Its productiveness, attractiveness, and hardiness make it worthy a place in any dooryard.

44540 to 44546. *ROSA* spp. Rosaceæ.

Rose.

44540 to 44543. *ROSA* spp.

The names given in the following notes are not used as valid for the material that we have, since the seeds received do not agree with seeds of these species received directly from the Arnold Arboretum. The notes are published merely to enable us to hold the information together.

44540. Received as Wilson No. 666, *Rosa helenae*.44541. Received as Wilson No. 666a, *Rosa rubus*.44542. Received as Wilson No. 1125, *Rosa brunonii*.

44543. Received as Wilson No. 1128. This number, Mr. Rehder informs us, is *Sorbus esserteauiana*, and he suggests that the number should have been 1126, *Rosa davidii elongata*.

44544. *ROSA BANKSIAE NORMALIS* Regel.

A climbing bush, 6 m. (20 feet) or more tall, common in western Hupeh and eastern Szechwan, China, from the river level to 1,000 m. (3,250 feet) altitude. It often rambles over trees, and E. H. Wilson has seen trees 50 feet high completely festooned with this rose. The fragrant flowers are always pure white, and the fruits are dull red and abundant. The root bark is used locally for strengthening fishing nets and dyeing them brown. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, pt. 2, p. 317.*)

44545. *ROSA MOYESII* Hemsl. and Wils.

Forma *rosea* Rehder and Wilson. An upright bush, found in western Szechwan, China, up to 3,300 m. (11,000 feet) altitude, growing to a height of 1 to 5 m. (3 to 16 feet), and distinguished from the typical species by its large leaves and large, pale-pink flowers. The large fruits are either dull red or scarlet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, pt. 2, p. 325.*)

44546. *ROSA RUBUS* Lev. and Van.

A climbing shrub, common everywhere in western Hupeh and eastern Szechwan, China, from the river level to 1,300 m. (4,200 feet) altitude. It is readily distinguished from its near relatives by the densely hairy shoots and leaves. It grows to a height of 2.5 to 4 m. (8 to 13 feet), with dull-red globose fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, pt. 2, p. 308.*)

44520 to 44549—Continued.**44547. VIBURNUM KANSUENSE** Batal. Caprifoliaceæ.

A tall Chinese shrub of loose and open habit, found at altitudes of 6,000 to 9,000 feet. It has oblong leaves, and its juicy, red berries can be used in making agreeable drinks. (Adapted from *note of Frank N. Meyer, May 11, 1915.*)

See also S. P. I. No. 40692 for further description.

44548. VIBURNUM KANSUENSE Batal. Caprifoliaceæ.

A form differing from the preceding number in habit and size.

44549. AMPELOPSIS ACONITIFOLIA Bunge. Vitaceæ.

A very handsome northern Chinese vine with finely divided foliage. The leaves are five parted and 2 to 3 inches long; the inconspicuous flowers appear in summer, and the small orange berries mature in autumn. It should be planted where only a light covering is desired and is hardy in the northern United States. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 278.*)

44550 to 44553. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Chefoo, China. Presented by Mr. Lester Maynard, American consul general. Received April 5, 1917. Quoted notes by Mr. Maynard.

44550. "No. 4. *Ch'iu t'ao tzŭ* (autumn peach); grown at Fushanhsien. This is considered one of the best varieties; a freestone, green skin, white flesh, average weight $7\frac{1}{2}$ ounces to 1 pound; ripens in August."

44551. "No. 5. *Hsieh t'ao* (blood peach); grown at Fushanhsien. The largest peach grown in this district; average weight, $7\frac{1}{2}$ ounces to 1 pound; a freestone; skin and flesh red, flesh hard and dry, very little juice, taste sour; ripens in August."

44552. "No. 6. *Ch'ing p'i lan* (green skin blue); grown at Laiyang. One of the best peaches grown in Shantung, being both sweet and juicy; about the size of *Ch'iu t'ao tzŭ* [S. P. I. No. 44550], average weight, $7\frac{1}{2}$ ounces to 1 pound, freestone, green skin, white flesh; ripens in September."

44553. "No. 7. *Tung t'ao* (winter peach); grown at Fushanhsien. Considered the best quality of peach grown in this district; about the size of *Ch'ing p'i lan* [S. P. I. No. 44552], average weight, $7\frac{1}{2}$ ounces to 1 pound; freestone, green skin, white flesh; ripens in November."

44554. TAMARIX APHYLLA (L.) Karst. Tamaricaceæ. **Tamarisk.**
(*T. articulata* Vahl.)

From Algiers, Algeria. Cuttings presented by Dr. L. Trabut. Received April 12, 1917.

"A tamarisk from the Sahara; a beautiful tree which is very ornamental and produces a gall very much used in the south by the natives for tanning. This gall contains 45 per cent of pyrogallie tannin. It is produced by an acarion, *Eriophyes tlaiae* Trab. I have been able to reproduce it easily on our *Tamarix articulata*. I estimate that an annual harvest of 20 quintals is possible from 1 hectare." (Trabut.)

44555 and 44556.

From Tolga, via Cairns, Queensland, Australia. Presented by Mr. J. A. Hamilton. Received April 12, 1917.

44555. CUCURBITA sp. Cucurbitaceæ. **Melon.**

"Chinese pie or jam melon; very productive; the point in its favor is that the seeds are all in one cavity and not embedded in the flesh as in the other preserving melons." (*Hamilton.*)

44556. PASSIFLORA SUBEROSA L. Passifloraceæ.

"Wild passion vine; the flowers are pretty, but I can not say whether the fruit is edible or not." (*Hamilton.*)

44557 to 44561.

From Jerusalem, Palestine. Presented by Mr. E. F. Beaumont, The American Colony Stores, through Mr. Abram I. Elkus, American consul. Received April 17, 1917.

44557. LAWSONIA INERMIS L. Lythraceæ. **Henna.**

A handsome shrub, probably native to northern Africa, western and southern Asia, but widely cultivated in tropical countries. The flowers are white, pink, or cinnabar red and are very fragrant. From the leaves is produced the henna or alhenna of the Arabs (cyprus of the ancients), a yellow dye which is used in Egypt and elsewhere by women to color their nails, by men to dye their beards, and for similar purposes. It is the camphire of the authorized version of the Bible. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 4, p. 1830.*)

44558. MEDICAGO CILIARIS (L.) All. Fabaceæ. **Bur clover.**

An annual Asiatic plant, growing on the coast and up to 800 m. above sea level, with squarish leaflets; yellow flowers about one-third of an inch long, in few-flowered clusters or solitary; and hairy coiled pods, with six to eight rather loose coils having two rows of awl-shaped prickles on the thick flat margin. (Adapted from *Post, Flora of Syria, Palestine, and Sinai, p. 230.*)

44559. MEDICAGO SCUTELLATA (L.) Mill. Fabaceæ. **Bur clover.**

An annual Asiatic herb, 12 to 20 inches high, with rather large oval or oblong, acutely denticulate leaflets, orange flowers, one-sixteenth of an inch long in small clusters or solitary, and smooth, coiled pods, nearly half an inch in diameter, composed of five to six coils. (Adapted from *Post, Flora of Syria, Palestine, and Sinai, p. 227.*)

44560. PISUM FULVUM Sibth. and Smith. Fabaceæ. **Pea.**

A slender-stemmed annual, common in rocky places around the eastern Mediterranean countries, about 5 dm. tall, with oval to round, dentate leaflets up to 2 cm. long, rusty yellow flowers, pods 4 cm. long, and velvety black, round peas about 4 mm. in diameter. (Adapted from *Post, Flora of Syria, Palestine, and Sinai, p. 296.*)

44561. PISTACIA TEREBINTHUS L. Anacardiaceæ. **Terebinth.**

A medium-sized tree, native to the Mediterranean countries, 12 to 15 m. high, with compound shining leaves having 7 to 11 oblong, caducous leaflets which when bruised give off a strong terebinth odor, hence the name of the plant. The small purple flowers occur in axillary panicles on the previous year's growth; and the fruit is a little, dry, purple drupe which becomes brown when fully mature, is slightly acid and edible. It produces a transparent gum which is used as a chewing gum. The leaves are used as a fodder by the Arabs. (Adapted from *M. Bangol, Bulletin de la Société d'Horticulture de Tunisie, vol. 14, p. 153.*)

44562. GOSSYPIUM sp. Malvaceæ.**Cotton.**

From Kribi, Kamerun, West Africa. Presented by Rev. H. W. Grieg, Presbyterian Church Mission. Received April 12, 1917.

Seeds sent in response to a request for a native cotton reported to be used by the Bulus in weaving cloth.

44563. BALANITES AEGYPTIACA (L.) Delile. Zygophyllaceæ.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Gizeh Branch, Ministry of Agriculture. Received April 14, 1917.

A tropical African tree, 3 to 5 meters high, with straight, rigid branches; woolly, papery, ovate leaves; green flowers in 3 to 5 flowered cymes; and edible drupes 3 cm. long, with a bitter-sweet flavor. The natives make an intoxicating drink from these fruits, which are also eaten raw with a laxative effect. The seeds yield an oil known as oil of betu, which is used as a liniment, for food, and, to some extent, as a medicine. The wood is hard and close grained, and the bark of the young trees yields a very strong fiber. One of the ingredients of the celebrated spikenard perfume is supposed to have been furnished by this tree. (Adapted from *Post, Flora of Syria, Palestine, and Sinai*, p. 199, and from *Kew Bulletin of Miscellaneous Information, Additional Series IX*, p. 138.)

44564. ZEA MAYS L. Poaceæ.**Corn.**

From Rosario, Argentina. Presented by Mr. William Dawson, jr., American consul. Received April 16, 1917.

"A Rosario landowner who has made extensive experiments with corn recently reported to the Rosario Bolsa de Comercio with respect to the advisability of sowing bitter corn (maiz amargo) which is indorsed in some quarters as locust proof. His recommendations are strongly against this variety. While the locust, unless hard pressed, will not eat the leaves if it finds the plant in flower or grain, it will eat bitter corn as well as any other form. The growth of bitter corn is very slow and requires 9 to 10 months, and even more. With its enormous leaves it exhausts the soil, and after the harvest the hard green stalks make it very difficult to clear the ground, especially in Argentina, where farm labor is costly. Finally, its yield is very small and from 25 to 50 per cent of that which any other common variety of corn will give under similar conditions, to say nothing of the yields obtained from selected seed.

"The landowner mentioned, who makes a specialty of selected seed, states that bitter corn is the only variety that he does not sell. He considers it useful only in the Chaco where 'land is as plentiful as locusts,' and there is little objection to exhausting the soil. Furthermore, in the Chaco the distance between farms is too great to permit an organized defensive campaign against locusts, which under ordinary circumstances respect the leaves of bitter corn." (*Dawson, in Commerce Reports, January 4, 1917, p. 36.*)

44565. MYRISTICA FRAGRANS Houtt. Myristicaceæ.**Nutmeg.**

From Grenada, British West Indies. Presented by Mr. L. F. de Backer, New York City. Received April 16, 1917.

An East Indian tree, 20 to 25 feet high, with smooth grayish brown bark; oval, dark-green, sharp-pointed leaves 3 to 6 inches long, slightly aromatic when bruised; pale yellowish dioecious flowers in axillary racemes; and nearly spherical, pearlike drupes. The flesh of these drupes is yellowish and full of astringent juice, and discloses the oval, hard-shelled, rugged, dark-brown nut. This contains the nutmeg of commerce, an oval, pale-brown seed which soon becomes shriveled and wrinkled. (Adapted from *Curtis's Botanical Magazine*, pls. 2756 and 2757, as *Myristica officinalis*.)

44566 and 44567. AMARANTHUS GANGETICUS L. Amaranthaceæ. Amaranth.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received April 14, 1917.

44566. "(No. 2383a. Peking, China, February 17, 1917.) A red *Amaranthus*, used locally as a vegetable, like spinach, when young. Sometimes the seed is sown in a moist, dark, and warm place, and the young, red-colored seedlings are eaten as a rare delicacy at feasts. The seed itself is apparently never used in the north of China as a grain food. Chinese name *Hung hsien ts'ai* (red hsien vegetable). (Meyer.)

44567. "(No. 2384a. Peking, China, February 17, 1917.) A green *Amaranthus*, used locally as a vegetable, like spinach, when young. Sometimes the seed is sown in a moist, dark, and warm place, and the young seedlings are eaten as a rare delicacy at feasts. Chinese name *Ch'ing hsien ts'ai* (green hsien vegetable). (Meyer.)

44568. ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received April 13, 1917.

A horticultural variety with large fruits, sent under the name of *Annona macrocarpa* Hort.

44569 to 44579.

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received April 17, 1917.

44569. APIOS FORTUNEI Maxim. Fabaceæ.

Hodo-imo. Tubers of a perennial leguminous climbing plant, native to Japan, sometimes 10 feet long, with compound leaves having three to five leaflets, panicles of greenish yellow flowers, and pods about 2½ inches long. The round, bulletlike tubers are boiled and eaten, and a kind of starch is manufactured from them. (Adapted from *Useful Plants of Japan, Agricultural Society of Japan, Tokyo, p. 69.*)

44570. CHENOPODIUM ACUMINATUM Willd. Chenopodiaceæ.

Akaza. Seed of an annual Japanese herbaceous plant, growing wild everywhere, and attaining a height of 4 to 5 feet. The large, old stems are used for canes. There are several horticultural varieties, all being used for the same purpose. (Adapted from *Useful Plants of Japan, Agricultural Society of Japan, Tokyo, p. 15.*)

44571. COIX LACRYMA-JOBI L. Poaceæ.

Job's-tears.

Seeds received under the name *Coix agrestis* Lour., which is now considered a synonym of the above. Loureiro describes it as differing from the common form by its simple stems, smooth leaves, and nearly globular seeds. Obtained for the work of the Office of Forage-Crop Investigations.

44572. DIANTHUS JAPONICUS Thunb. Silenaceæ.

Pink.

Plants of a glabrous perennial, native of Japan and Manchuria, with simple stems about 20 inches tall, ovate, lance-shaped, sharp-pointed leaves twisted at the base, and red flowers six to eight in a head. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 2, p. 1000.*)



BEECHIS AS THEY ARE SOLD IN THE CHINESE MARKETS.

(*Elaeochitis labrusca* (Roxb.) Schult., S. P. I. No. 44573.)

These beechis, water nuts, or water chestnuts, as the underground bulblike rootstocks of this sedge are variously called, form the most tender and palatable part of the Chinese chop suey and have a flavor suggestive of coconuts. They are sold either as gathered (as shown at the right) or peeled and strung on bamboo sticks (at the left). In the latter form they cost 1 to 3 cents (Mex.) per stick. While they are usually eaten raw, they are sometimes steamed. When grated they are said to form an excellent substitute for sweet corn. (Photographed by F. N. Meyer, Changsha, Hunan Province, China, May 16, 1917; PI2398Fs.)



A BEECHI POND NEAR CANTON.

(*Eleocharis tuberosa* (Rosb.) Schult., S. P. I. No. 11573.)

The culture of the beechi in South China forms an important plant industry, which is peculiar in that it utilizes shallow ponds made for the purpose. The bulblike rootstocks are planted close together on the bottom of the pond and a few inches of water turned on them, and as their slender grasslike stems grow the water is deepened. After six months or so the water is drained off and the rootstocks are dug from the mud. The possibility of utilizing this plant on certain of our undrained lands in the extreme South should make its preliminary trial worth while. (Photographed by David Fairchild, Canton, China, December, 1901; negative No. 0.504.)

44569 to 44579—Continued.

44573. *ELEOCHARIS TUBEROSA* (Roxb.) Schult. Cyperaceæ. **Beechi.**

These beechi tubers are mostly eaten raw, but are also sliced and shredded in soups and in meat and fish dishes. Foreigners in China grate them and serve them boiled as a winter vegetable, in which state they very much resemble sweet corn in looks and taste. The plants need a hot summer to mature and are grown on a muck or clayey soil with several inches of standing water on top, in very much the same manner as wet-land rice. (See S. P. I. No. 41680.)

For illustrations of beechi tubers and growing plants, see Plates I and II.

44574 and 44575. *ERIOBOTRYA JAPONICA* (Thunb.) Lindl. Malaceæ. **Loquat.**

44574. *Motogi-biwa.* (Trees.) **44575.** *Haragami-biwa.* (Trees.)

44576. *FICUS PYRIFOLIA* Burm. Moraceæ. **Fig.**

The name *Ficus pyrifolia* is of doubtful application. These plants may be *F. benjamina*, *F. erecta*, *F. fontanesii*, or *F. rubra*. (See Bailey, *Standard Cyclopedia of Horticulture*, vol. 3, p. 1233.)

44577. *MALUS SYLVESTRIS* Miller. Malaceæ. **Apple.**
(*Pyrus malus* L.)

Nakanaruko. Trees of "a variety of apple known in Japan as the *Iwai* or *Nakanaruko*. This variety is supposed to have come from this country, but it has also been said that it is of German origin. It has become a leading fall variety in Japan." (*J. K. Shaw, pomologist, Massachusetts Agricultural College.*)

44578. *PYRUS* sp. (?) Malaceæ. **Pear.**

44579. *ZINZIBER MIOGA* Roscoe. Zinziberaceæ.

Roots of a perennial Japanese herb about 3 feet high, both wild and cultivated, with nearly linear, smooth, membranaceous leaves up to 15 inches long; white flowers in spikes 2 to 3½ inches long; and ovoid capsules. In summer and autumn the flowers, with the bracts, are eaten either raw or boiled; they have a slight acid taste and an aromatic odor. (Adapted from *Useful Plants of Japan, Agricultural Society of Japan, Tokyo*, p. 30, and from Bailey, *Standard Cyclopedia of Horticulture*, vol. 6, p. 3544.)

44580. *SOLANUM TUBEROSUM* L. Solanaceæ. **Potato.**

From Bogota, Colombia. Tubers presented by Mr. Jorge Ancizar. Received April 19, 1917.

Papa criolla. Tubers shaped like the common potato, but only about an inch in shortest diameter. "The Creole potatoes come out in three months and are delicious fried with their skins." (*Ancizar.*)

44581 to 44587. *RIBES* spp. Grossulariaceæ. **Currant.**

From Ottawa, Canada. Plants presented by Mr. W. T. Macoun, Dominion Horticulturist, Central Experimental Farm. Received April 20, 1917.

44581. *RIBES VULGARE* Lam. **Garden currant.**

Cumberland. A strong, moderately spreading grower and one of the most productive currants. The bright scarlet fruits are acid, medium sized, of fairly good quality, and occur in bunches of average length, usually only about half filled. The season is medium. (Adapted from Macoun, *Bulletin 56, Central Experimental Farm, Ottawa, Canada*, p. 11.)

44581 to 44587—Continued.**44582. RIBES VULGARE Lam.****Garden currant.**

Large white. A strong, upright, early, productive currant, with pale-yellow, medium to large, briskly subacid fruits in medium to large, half-filled bunches. This currant is better than most in quality. (Adapted from Macoun, *Bulletin 56, Central Experimental Farm, Ottawa, Canada, p. 14.*)

44583 to 44587. RIBES NIGRUM L.**Black currant.**

44583. Buddenborg. A strong-growing, moderately productive, late black currant, with large to very large, thick-skinned, subacid fruits of good quality and flavor and ripening fairly evenly. One of the largest fruiting varieties and one of the best in quality. (Adapted from Macoun, *Bulletin 56, Central Experimental Farm, Ottawa, Canada, p. 16.*)

44584. Magnus. A strong-growing and very productive black currant, with large, rather thick skinned, subacid fruits of good flavor and quality, in medium-sized clusters. It is promising because of its productiveness, large size, and good quality. (Adapted from Macoun, *Bulletin 56, Central Experimental Farm, Ottawa, Canada, p. 18.*)

44585. Eclipse. A rather strong growing, early, productive black currant, with medium to large, rather thick skinned, fairly tender, subacid fruits of good quality. (Adapted from Macoun, *Bulletin 56, Central Experimental Farm, Ottawa, Canada, p. 18.*)

44586. Eagle. A strong-growing, productive black currant, with mostly large, moderately thick skinned, briskly subacid fruits of medium quality. It ripens somewhat unevenly and is not as good in quality as some others. (Adapted from Macoun, *Bulletin 56, Central Experimental Farm, Ottawa, Canada, p. 18.*)

44587. Collins' Prolific. A strong-growing, productive Canadian black currant with mostly large, thick-skinned, acid fruits of medium quality, in large bunches. It ripens late and rather unevenly, but is one of the best commercial varieties on the market. (Adapted from Macoun, *Bulletin 56, Central Experimental Farm, Ottawa, Canada, p. 17.*)

44588. DIOSCOREA sp. Dioscoreaceæ.**Yam.**

From Ogbomosho, Nigeria, West Africa. Tuber presented by Dr. George Green. Received April 23, 1917.

The natives plant yams following a good shower in the summer or dry season (November to March). Such a storm usually comes about the end of January. The yams are cut crosswise into sections about 3 inches thick, and these sections are cut longitudinally. Only one piece is planted, about 4 inches deep, in each of the hills or heaps, which are about 3 feet in diameter, 2 feet in height, and 4 feet apart. A tuft of grass is placed on top of the hill to protect the planted yam from the sun, and soil is thrown on to prevent the wind blowing the grass away. The vines are supported by stout sticks or often by broken cornstalks. Yams require about six months to mature, those planted in January being ready for digging in July. Yams may be left in the ground for a week or two after the vines have died down. (Adapted from note by Dr. Green.)

44589 and 44590.

From Siena, Italy. Presented by Dr. Agilulfus Preda, director, Botanic Garden, University of Siena. Received April 23, 1917.

44589. *CORNUS CAPITATA* Wall. Cornaceæ. **Bentham's cornel.**

A deciduous or partially evergreen tree, native to the Himalayas and China, 30 to 40 or more feet high, of bushy habit, with opposite, leathery leaves 2 to 5 inches long and minute, inconspicuous flowers crowded in hemispherical masses about half an inch wide. The beauty of the inflorescence is in the four or six creamy-white or sulphur-yellow bracts which are about 2 inches long. The fruit forms a fleshy, strawberry-shaped crimson head a little more than an inch wide. The beauty of the flower bracts and of the fruits makes this an excellent ornamental. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 387, and *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 855.)

"This species is now fruiting at several places in California, notably in the Golden Gate Park, at Niles, and at Palo Alto." (*Fairchild*.)

See S. P. I. No. 42597 for previous introduction.

44590. *PTEROCARYA FRAXINIFOLIA* (Lam.) Spach. Juglandaceæ.
(*P. caucasica* Meyer.)

A large, spreading, ornamental tree, native to western Asia, growing to a height of 60 feet, with compound leaves 8 to 15 inches long, composed of 11 to 25 serrate leaflets; monœcious flowers in catkins; and small, 1-seeded, winged nuts. It is hardy as far north as Massachusetts, but needs some protection when young. Although it thrives best in rich, moist soil, it will grow well in drier localities. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2583.)

44591 to 44595. STYRAX spp. Styracaceæ. **Storax.**

From Orleans, France. Plants purchased from Messrs. Léon Chenault & Sons. Received April 23, 1917.

44591. *STYRAX CALIFORNICUM* Torr.

An upright, branching shrub, usually about 6 feet high, with broad oval leaves from 1 to 2½ inches long; whitish flowers in mostly 3-flowered racemes; and 1-seeded fruits. It is native to the Sacramento Valley in northern California and is the most northern species of the genus. It bears a strong resemblance to *Styrax officinale* of southern Europe, from which it differs by its fewer flowered racemes and thickened pedicels. (Adapted from *John Torrey*, in *Smithsonian Contributions to Knowledge*, vol. 6, p. 4.)

44592. *STYRAX DASYANTHUM* Perkins.

A deciduous shrub or small tree, native to central China, with broadly oval or obovate pointed leaves 2 to 4 inches in length, and white flowers one-half to three-quarters of an inch long, produced in July in slender terminal racemes. It has proved hardy in the vicinity of London, England. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 557.)

44593. *STYRAX OFFICINALE* L.

An ornamental shrub or small tree, with broadly oval or ovate leaves 1 to 3 inches long; white, fragrant flowers appearing in June in short, terminal, few-flowered clusters; and roundish fruits; a native of Greece and Asia Minor at altitudes up to 3,600 feet. The fragrant resin known

44591 to 44595—Continued.

as storax is obtained from this shrub by bruising the stem. Hardy in the southern United States. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 559, 560, and from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 6, p. 3280.)

44594. STYRAX VEITCHIORUM Hemsl. and Wils.

A small tree, 12 to 15 feet high, with lanceolate, taper-pointed, thin, downy leaves, 3 to 5 inches long; and slender panicles of white flowers nearly an inch across, produced in groups at the ends of shoots from the uppermost leaf axis. Native to central China. It is hardy at Veitch's Nursery, Coombe Wood, England. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 560.)

44595. STYRAX WILSONII Rehder.

A very ornamental deciduous shrub, native to western China, 6 to 10 feet high, twiggy and much branched, with ovate, green leaves half an inch to an inch long, usually entire, but sometimes with the ends three lobed or sparsely toothed. The solitary, nodding flowers are pure glistening white, five-eighths to three-quarters of an inch wide, produced in June on short stalks from the leaf axils. The shrub is remarkable in that it begins to flower when only a few inches high and 2 or 3 years old. It is probably hardy as far north as Philadelphia. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 560, and from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 6, p. 3279.)

44596. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ.

(*P. juliflora* DC.)

Algaroba.

From Oran, Salta, Argentina. Presented by Mr. S. W. Damon. Received April 19, 1917.

"Late-fruiting black and white *Algarobas* from the district at the junction of the Provinces of Salta, Catamarca, and Tucuman." (*Damon.*)

See S. P. I. Nos. 44434 and 44435 for previous introduction and description of the black and white varieties of the *Algaroba*. This introduction is a mixture of the two.

44597 to 44599. SOJA MAX (L.) Piper. Fabaceæ.

Soy bean.

(*Glycine hispida* Maxim.)

From Japan. Presented by Rev. Christopher Noss, Wakamatsu, Iwashiro, Japan. Received April 23, 1917.

"Under date of November 24, 1916, you asked that I should obtain for you a quantity of the *Hato-koroshi-daizu* soy bean for experimental planting. I inquired at Kawamata, the town where I first found this variety, and asked our Japanese pastor to make a thorough search. No one could be found who knew anything about a bean called *Hato-koroshi-daizu* or who could exactly match the sample. Finally the pastor sent me 6 quarts of a variety which, he said, seemed to be about the same. This variety is called *Uba-no-kantsu-bushi* (nurse's mastication), referring to its flattened shape, as though mashed between the teeth of a nurse for a little child. (Japanese mothers and nurses are accustomed to masticate food that is hard before feeding it to their little ones.)

"I appealed to another of my Japanese workers, who is a graduate in agriculture and has served the Government as an agricultural expert. He undertook

to find the bean for me and made one special trip to look it up. He, too, reported that he could not find *Hato-koroshi-daizu*, and that the variety which seemed to be identical with it was in his district called *Shiroishi* (white stone, the name of a noted river in northern Japan). Of this variety he sent me about 4 quarts, which he said was all that he could find.

"I wrote to the chief agricultural school in my province and to the leading seedsman of Sapporo, the place from which we generally buy seeds for use in the north, and could find no trace of *Hato-koroshi-daizu*.

"I judge that the bean must have come from the south." (*Noss.*)

44597. From Wakamatsu.

44599. From Kawamata.

44598. From Odaka.

44600 to 44606. *SACCHARUM OFFICINARUM* L. Poaceæ.

Sugar cane.

From Port of Spain, Trinidad, British West Indies. Cuttings presented by Mr. J. de Verteuil, Superintendent of Field Experiments, Department of Agriculture. Received April 27, 1917.

Introduced for the Sugar Experiment Station, New Orleans, La.

44600. *Badilla* (*New Guinea* No. 15).

44601. *B-3922.*

44604. *B-6450.*

44602. *B-4934.*

44605. *B-6835.*

44603. *B-6308.*

44606. *Ba. 6032.*

44607 to 44609. *CORYLUS AVELLANA* L. Betulaceæ.

Filbert.

From Angers, France. Plants purchased from Mr. Charles Détriché. Received April 11, 1917.

44607. *Geante des Halles.*

44609. *Prolifique à coque serrée.*

44608. *Barcelona.*

For illustrations showing a fruiting branch and a growing tree of the *Barcelona* filbert, see Plates III and IV.

44610. *MAMMEA AMERICANA* L. Clusiaceæ.

Mamey.

From New Orleans, La. Obtained in the market by Mr. C. V. Piper, of the Department of Agriculture. Received April 20, 1917.

A large and unusually handsome West Indian tree of erect, compact habit, with glossy, dark-green, leathery leaves, fragrant white flowers, and globose russet fruits 3 to 6 inches in diameter. The tree is widely cultivated for its edible fruits, which are eaten raw or cooked, the flavor suggesting that of the apricot. They have a thick leathery rind and firm yellow flesh inclosing several large seeds.

44611 to 44622. *SACCHARUM OFFICINARUM* L. Poaceæ.

Sugar cane.

From the Philippine Islands. Presented by Mr. Adn. Hernandez, director, Bureau of Agriculture, Manila. Received April 25, 1917.

The following varieties were grown at the Alabang Stock Farm Station, Alabang, Rizal, P. I., and were imported for experimental purposes for the sugar experiment station, New Orleans, La.

44611 to 44622—Continued.

"*Hawaii No. 20* and *Louisiana Striped* are the most extensively cultivated varieties of sugar cane in the Philippines. The yield per hectare (2.47 acres) in cane and the sugar content of these varieties is about 100 metric tons and 13 per cent, as compared with the yield of the best Philippine variety (*Negros Purple*), 80 metric tons per hectare and a sugar content of 14 per cent." (*Wester, Food Plants of the Philippines.*)

44611. *Chenois.*44614. *Hawaii 20* × *Hawaii 309.*44612. *Hawaii 20.*44615. *Hawaii 27* × *Hawaii 309.*44613. *Hawaii 20.*44616. *Java 247.*

44617. *Lahaina.* "Long straight leaves of light color; rapid grower, deep rooting; hard rind when mature; superior richness of juice; firm, compact fiber, making the trash easy to handle." (*Deerr and Eckart, Bulletin 26, Hawaiian Sugar-Planters' Association Experiment Station.*)

44618. *Lahaina* × *Yellow Caledonia.*44619. *Louisiana Striped.*44620. *Louisiana Striped* × *Lahaina.*44621. *New Guinea 15*, or *Badilla.*44622. *Yellow Caledonia.***44623 and 44624. CHAYOTA EDULIS Jacq. Cucurbitaceæ.**(*Sechium edule* Swartz.)**Chayote.**

From Sydney, New South Wales, Australia. Fruits presented by Mr. George Valder, director, Department of Agriculture. Received June 30, 1917.

"The two varieties grown in New South Wales." (*Valder.*)

44623. White variety.

44624. Green variety.

44625 to 44628. PERSEA AMERICANA Mill. Lauraceæ. Avocado.(*P. gratissima* Gaertn. f.)

From Guatemala. Bud wood collected by Mr. Wilson Popenoe, agricultural explorer. Received April to June, 1917.

44625. "(Nos. 111, 121, 139. Avocado No. 18.) *Panchoy*.² "This is a very thick skinned fruit of unusually good quality. It is rather above medium size, weighing 15 to 18 ounces, and is of pleasing form—broadly obovoid. Perhaps its most striking characteristic is its unusually thick skin; but its quality deserves even more notice, for in this respect it is one of the very best in the collection. The seed is small.

"The parent tree is growing in the finca La Polvora in Antigua, Guatemala. The altitude is approximately 5,100 feet. The ground beneath the tree is planted in coffee bushes, which are now about 8 feet high. The soil is rich sandy loam, friable, black, and fertile. The tree is about 45 feet high, with a straight trunk 18 inches

² This and other varietal names for Mr. Popenoe's Guatemalan avocados are arbitrarily selected from appropriate words in the Maya language, the language of one of the most remarkable races of Central America, whose ruins and agricultural practices show it to have been peculiarly an agricultural race. It seems entirely fitting that to this race should be given the credit for first appreciating this distinct type of avocado, and no better way could be found than that of attaching to these varieties Maya names which some day may be as commonly used as *Bartlett* pear or *Baldwin* apple are used to-day in sections of this country. Furthermore, the names will indicate the Guatemalan origin of these plants as English names could not.



A FRUITING BRANCH OF THE BARCELONA FILBERT.

(*Corylus avellana* L., S. P. I. No. 44008.)

In the State of Washington thus far the Barcelona filbert seems to have led in productivity. The branch shown was cut from a young plant growing at the Yarrow Plant-Introduction Field Station, Rockville, Md. In one orchard of the Du Chilly and Barcelona varieties, near Vancouver, Wash., 80 trees of the Barcelona bore as many nuts as 240 of the Du Chilly, showing the importance of testing all the European varieties in America. Prof. A. A. Quarrn, of Vancouver, Wash., has just returned from an inspection of the filbert orchards of Europe and has introduced several new varieties. (Photographed by R. C. Traver, Photographic Laboratory, August 8, 1917; P26790FS.)



A YOUNG TREE OF THE BARCELONA FILBERT.

(*Corylus avellana* L., S. P. I. No. 4460S.)

Felix Gillette, of Nevada City, Calif., was a pioneer in the introduction of the filbert into the Pacific coast region. His collection of varieties, to which the Bureau of Plant Industry contributed, was maintained for some time after his death. From it, Prof. A. A. Quarnberg, of Vancouver, Wash., obtained some of the first plants of his filbert collection, which is now the most extensive one in this country. The increasing interest in filbert growing in the State of Washington makes this historical photograph of the beginning of the industry worth publishing. (Photographed by David Fairchild, at Nevada City, Calif., 1904; P1493FS.)



NUMBERING A SELECTED AVOCADO TO AVOID ERRORS IN CUTTING BUD WOOD.

(*Persea americana* Mill., S. P. I. No. 44625.)

This tree is the Panchoy seedling, Mr. Popenoe's selection No. 18. It is one of the excellent varieties found in Guatemala. Mr. Popenoe employed the method of cutting a number in the bark to mark his selected seedling trees. This enabled him to cut several lots of bud wood at different times from the same tree in the forest. (Photographed by Wilson Popenoe in the finca La Polvora, Antigua, Guatemala, May 3, 1917; P17215FS.)



A GUATEMALAN GIRL HOLDING A CLUSTER OF TUMIN AVOCADOS.

Persia americana Mill., S. P. I. No. 44627.)

This variety, the Tumin, is now being propagated in Florida and California from bud wood obtained by Mr. Popenoe from the tree which yielded the fruits shown here. The Tumin avocado is unusually productive, its fruits growing in clusters of two to six. These fruits resemble closely in form the Trapp variety, weigh about a pound, and have a smooth, glossy, purple-black skin. They are of good quality. (Photographed by Wilson Popenoe, Antigua, Guatemala, February 24, 1917; P17112FS.)

44625 to 44628—Continued.

thick at the base, giving off its first branch 18 feet from the ground. The crown is not very broad, but open and sparsely branched, some of the limbs showing a tendency to droop. The age of the tree is not definitely known, but it is probably 15 to 20 years. The character of bud wood produced by the tree is fairly satisfactory; the growths are short, but the buds are well formed and show no tendency to drop.

"Lacking a definite test in the United States, it must be assumed that the variety is about average in hardiness. The climate of Antigua is not sufficiently cold to demonstrate the hardiness of a variety.

"The flowering season is February and March. The fruit ripens rather early for this region, the first ones commencing to drop in February, while a few hang on until April or May. The season may be called January to April. This rather early season of ripening is of especial importance to California, and the variety should be given a careful trial in that State. The productiveness of the variety is satisfactory. The crop which ripened in the spring of 1917 was good, but few fruits were set from the blooms of 1917. This is nothing unusual, since the Guatemalan race of avocado does not as a rule bear heavily every year.

"The fruit is broadly obovoid, 1 pound in weight, round and yellowish green on the surface, with a skin almost as thick as a coconut shell, but easily cut. The flesh is almost as yellow as butter, clean and free from discoloration, and of very rich flavor, while the seed is comparatively small and tight in the cavity. The variety has every appearance of being an excellent one.

"The fruit may be formally described as follows: Form obovoid, slightly oblique at the apex; size above medium to large, weight 15 to 18 ounces, length $4\frac{1}{2}$ inches, greatest breadth $3\frac{1}{2}$ inches; base rounded or obscurely pointed; stem stout, 4 inches long, inserted obliquely without depression; apex obliquely flattened, depressed around the stigmatic point; surface heavily pebbled to rough, green to yellowish green in color, with numerous small, rounded, yellowish dots; skin thick, about one-eighth of an inch throughout, not thicker toward the apex than near the base, as in many avocados, woody, very brittle; flesh firm, smooth, rich yellow in color, tinged with green near the skin, fiber or discoloration entirely lacking, the flavor very rich and pleasant; quality excellent; seed medium sized or rather small, roundish conic in form, weighing 2 ounces, tight in the cavity, with both seed coats adhering closely." (*Popenoe*.)

For an illustration of the Panchoy avocado, see Plate V.

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 127, fig. 23; reprint, 1918, p. 25, fig. 23; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 54, pl. 17.

44626. "(Nos. 112, 119, 141. Avocado No. 21.) *Benik*. This is a very handsome fruit of fine quality. When cut in halves the contrast of its purplish maroon skin with its rich yellow flesh is very attractive, the purple of the skin intensifying the yellow of the flesh. The tree is a good bearer, and the variety seems well worthy of a trial in the United States.

"The parent tree is growing in the finca La Polvora in Antigua, Guatemala. It has recently been girdled, with the intention of killing

44625 to 44628—Continued.

it to make room for more coffee bushes, so that it will probably not be in existence a year hence. The altitude here is about 5,100 feet. The tree stands among coffee bushes, many of which grow beneath its branches. The soil is a loose sandy loam, deep and fertile. The tree is about 35 feet high, the trunk 18 inches in diameter at the base, and the first branches 12 feet from the ground. The crown is round, dense, of good form, but high above the ground. The age of the tree is not known, but it would appear to be at least 20 years. The growth is vigorous and shapely, though the branchlets are rather short. The bud wood furnished by the tree is quite satisfactory, the eyes being well developed and not losing their outer bud scales or falling early. The bud sticks, however, are short.

"The hardiness of the variety must be considered about average until the facts can be ascertained by a test in the United States. Antigua is not cold enough to show up the hardiness of an avocado of the Guatemalan race.

"The tree flowers in late February and March. It ripened a fairly good crop of fruit in 1917 from the 1916 blooms, and set a very heavy crop to ripen in 1918. Its productiveness, therefore, seems to be above the average. The season of ripening is from February, when the fruits change from green to purple and thus indicate their maturity, to May, when the last fruits fall to the ground. It is a midseason sort, commencing to ripen a trifle earlier, perhaps, than the average.

"The fruit is broadly obovoid to pear shaped, about 20 ounces in weight, with a rough surface of rich purplish maroon color. It presents a very attractive appearance. The skin is rather thin and somewhat pliable, but coarsely granular in texture. The flesh is rich cream yellow in color, free from discoloration, and of very rich, pleasant flavor. The seed is medium sized and tight in the cavity.

"A formal description of the fruit is as follows: Form broad pyriform to obovoid; size very large, weight 20 ounces, length 5 inches, greatest breadth $3\frac{3}{4}$ inches; base pointed, the stem inserted obliquely without depression; apex rounded, slightly depressed immediately around the stigmatic point; surface pebbled to rather rough, deep purplish maroon in color, almost glossy, with few inconspicuous, light-colored dots; skin rather thin for this race, about one-sixteenth of an inch throughout, fairly pliable and peeling from the flesh when fully ripe, the purplish maroon color of the surface extending clear through the skin; flesh rich cream yellow in color, changing to pale green close to the skin, firm, of rich flavor; quality excellent; seed medium sized, weighing about 3 ounces, roundish conical, tight in the cavity, with both seed coats adhering closely." (*Popenoe*.)

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 129, fig. 25; reprint, 1918, p. 25, fig. 25; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 57, pl. 18.

44627. "(Nos. 113, 120, 140, 163, 225. Avocado No. 20.) *Tumin*. This variety is remarkable for its unusual productiveness, the fruits often being borne in clusters of two to five, a characteristic which is quite rare in the Guatemala race. The fruit is almost identical with the Florida *Trapp* in form; it weighs almost a pound, and is of handsome appearance, with a smooth, glossy skin of purple-black color. The

44625 to 44628—Continued.

flesh is of excellent appearance and flavor. The seed is medium sized. Taken all around, this seems a very promising variety, especially for Florida, where many of the Guatemalan avocados do not bear heavily.

"The parent tree is growing in the finca La Polvora in Antigua, Guatemala. The altitude is approximately 5,100 feet. On all sides of the tree, and crowding it somewhat, are large coffee bushes. The soil is a rich, sandy loam of volcanic origin, deep and friable. The tree is probably 6 or 7 years old. It is 20 feet in height, very slender in habit, the trunk 6 inches through at the base, branching at 8 feet from the ground. The crown is slender, sparsely branched, with very little fruiting wood. Its growth seems to be reasonably vigorous, the young branchlets being stout, though very short. The wood is rather brittle. The bud wood furnished by this tree is rather poor, owing to the shortness of the growths and the fact that the buds are too closely crowded together. The eyes, however, are well formed and show no tendency to drop and leave a blind bud. It may be found that the tree will require training when young to keep it stocky and of good form.

"The hardiness of the variety can not be ascertained at present, since the climate of Antigua is not cold. It may be assumed, until a test is made in the United States, that it is about as hardy as the average of the Guatemalan race.

"The tree did not flower in 1917, owing, quite likely, to the heavy crop which it ripened from the 1916 blooms. Probably under better cultural conditions and by thinning heavy crops greater regularity in bearing can be induced; in Guatemala, where no cultural attention is given to the trees, it is common for them to bear very heavily one season and fail to bear the next. Judging by the appearance of the spring flush of growth, which always accompanies the flowers, the variety will flower here in March. The fruits ripen from March to May. Although the tree has very little fruiting wood, it produced 125 fruits in 1917, which can be considered a very heavy crop. Several of the branches, in fact, were broken by the weight of the fruits they were carrying.

"The form of the fruit, as already mentioned, is practically the same as that of the *Trapp*—oblate or roundish oblate. The average weight is 12 to 16 ounces, but it may be expected that the weight of this and all other varieties in the collection will be slightly greater under good culture in the United States than it is in Guatemala, where the trees receive no attention. The skin is rather thin and smooth on the surface. The color is a deep purple, almost black. Unlike most Guatemalan avocados, the surface possesses a decided glossiness. The flesh is rich yellow in color, free from discoloration or fiber, and of very rich flavor. The seed varies from small to slightly large. In this connection it may be noted that the seeds of round or oblate avocados frequently are found to vary considerably in size, even among the fruits of a single tree. In this particular variety the average is not large, but occasional fruits were found in which the seed was a trifle too large. In others it is comparatively small. It is always tight in the cavity.

"The following is a formal description of the fruit: Form roundish oblate or oblate; size medium to above medium; weight 12 to 15 ounces, length $3\frac{1}{4}$ inches; greatest breadth $3\frac{3}{8}$ to $3\frac{5}{8}$ inches; base rounded,

44625 to 44628—Continued.

the very short, stout stem inserted without depression and almost squarely; apex flattened, not depressed; fruits borne singly or in clusters of two to six; surface almost smooth or very lightly pebbled, deep purple in color, glossy, with very numerous minute yellowish dots; skin thin for this race, one-sixteenth of an inch at apex and slightly less toward the base of the fruit, pliable, peeling readily; flesh firm, smooth, rich cream yellow changing to pale green near the skin, free from fiber or discoloration, and of rich, pleasant flavor; quality excellent; seed roundish oblate, variable in size, weighing $1\frac{1}{2}$ to 3, commonly 2, ounces, tight in the cavity, with both seed coats adhering closely to the cotyledons." (*Popenoe*.)

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 128, fig. 24; reprint, 1918, p. 25, fig. 24; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 55.

For an illustration of fruits of the Tumin avocado, see Plate VI.

44628. "(No. 114. Avocado No. 19.) *Hunapuh*. From the finca La Polvora in Antigua, Guatemala. Altitude approximately 5,100 feet.

"A fruit of large size and attractive appearance, with a comparatively small seed. The quality, while fairly good, did not seem to be up to the standard of those included in the Guatemalan collection, hence the variety is not recommended for general distribution with the rest. However, on the possibility that it may prove to be of better flavor when grown under more favorable conditions, bud wood has been sent in for trial at the Plant Introduction Garden, Miami, Fla., and perhaps at one or two places in California.

"Form obovoid to ovoid; size extremely large, weight $1\frac{1}{2}$ to $1\frac{3}{4}$ pounds, length 5 to $5\frac{1}{4}$ inches, greatest breadth 4 inches; base rounded, the very short, stout stem inserted without depression, slightly oblique; apex rounded, very slightly depressed close to the stigmatic point; surface almost smooth to lightly pebbled, dull purple in color, with numerous minute yellowish dots; skin thick, one-eighth of an inch toward the apex of the fruit, slightly less near the base, coarsely granular, brittle; flesh firm, creamy yellow in color, changing to pale green near the skin, free from fiber and with very slight discoloration, the flavor pleasant but not very rich; quality fair to good; seed oblong conic, rather small, weighing 2 ounces, tight in the seed cavity, with both seed coats adhering closely; season early to midseason or rather late, February to June." (*Popenoe*.)

44629 to 44637. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Genoa, Italy. Obtained through Mr. David F. Wilber, American consul general. Received April 26, 1917.

Seeds of the following varieties of peaches were obtained in response to a request from Mr. W. F. Wight, of the Office of Horticultural and Pomological Investigations, for botanical study and breeding experiments.

44629. *Bascina di Polcevera* (from Cesino). August.

44630. *Bascina di Polcevera* (from Livellato). August.

44631. *Gialla di Cesino* (Cesino Yellow). August.

44629 to 44637—Continued.

44632. *Gialla Grigui* (Yellow Grigui from S. Cipriano). August.

44633. *Grigui* (from S. Cipriano.) Early.

44634. *Rossa Bascina Tardiva* (Late Bascina from Maneseno, S. Cipriano, Vallee Calda).

44635. *Rossa Combi di Comago* (Red Combi from Comago). Early.

44636. *Rossa Tardiva Grigui* (Late Red Grigui from S. Cipriano).

44637. *Trionfo Primaticcia* (Early Triumph). "Light yellow pulp, fruit maturing in June. Tree large and prolific." (*Fratelli Ingegnoli, Catalogo Generale, 1914, p. 79.*)

44638 to 44648. RIBES spp. Grossulariaceæ.

From Saonara (Padua), Italy. Plants purchased from Fratelli Sgaravatti. Received April 26, 1917.

44638 to 44640. RIBES NIGRUM L.**Black currant.**

44638. *Cassis Gialla*. "Medium-sized fruit, yellowish brown." (*Sgaravatti catalog.*)

44639. *Neapolitana (Bang Up)*. A strong-growing, moderately productive black currant, with rather large fruits in medium-sized bunches. The flavor is briskly subacid, and the quality a little above the average. (Adapted from Macoun, *Bulletin 56, Central Experiment Station, Ottawa, Canada.*)

44640. *Regina Vittoria. (Victoria.)* A rather vigorous, moderately productive, rather late black currant, with large or very large thick-skinned subacid fruits in large bunches. The quality is good, but the fruit ripens somewhat unevenly. (Adapted from Macoun, *Bulletin 56, Central Experiment Station, Ottawa, Canada.*)

44641 to 44648. RIBES VULGARE Lam.**Garden currant.**

44641. *Bella di Versaglia rossa* (red). "Long bunches, fruit large." (*Sgaravatti catalog, October, 1908.*)

44642. *Bella di Versaglia bianca* (white). "Long bunches, fruits large." (*Sgaravatti catalog, October, 1908.*)

44643. *Carnea*. "Red, lax." (*Sgaravatti catalog, October, 1908.*)

44644. *Ciliegia a frutto rosso* (red-fruited cherry).

44645. *D'Ollana bianca* (White Dutch). A moderately productive, fairly vigorous, white currant with uneven, pleasantly acid fruits in large, well-filled bunches. (Adapted from Macoun, *Bulletin 56, Central Experiment Station, Ottawa, Canada.*)

44646. *D'Ollana rossa* (Red Dutch). A vigorous, spreading, very productive red currant with small to medium-sized acid fruits in large bunches. (Adapted from Macoun, *Bulletin 56, Central Experiment Station, Ottawa, Canada.*)

44647. *Grossa bianca de Werder* (Werder's large white).

44648. *Grossa perla rossa* (large pearl red).

44649 to 44657. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Palermo, Italy. Obtained through Mr. Samuel H. Shank, American consul. Received April 25, 1917.

These peach varieties were sent in response to a request for peach seeds for the botanical studies and breeding experiments of the Office of Horticultural and Pomological Investigations.

44649. *Fragolara*. From the Macchiarelle estates. Early.

44650. *Fragolara selvatica*. From garden at Bagheria.

44651. *Manilina*. From Passo di Rigano, near Morano. Early.

44652. *Manilina*. From garden of Rossi Ignacio. Early.

44653. *Pesca agostina* (August peach). From garden at Trabia. Good quality. Native name *Servaggia tardia* (late servaggia).

44654. *Pesca Martorana*. From garden at Trabia. Good quality.

44655. *Pesca Martorana*. From garden at Ficorotti, near Macchiarelle.

44656. *Rossa Martorana* (red Martorana). From gardens at Macchiarelle and Ficorotti.

44657. *Settembrino* (September). From Scillata. Collected by Prof. Accarati.

44658 and 44659. ROLLINIA MUCOSA (Jacq.) Baill. Annonaceæ. Biribá.

From Para, Brazil. Presented by Dr. J. Simão da Costa. Received April 26, 1917.

Two separate packages. "I can not assert that they are different varieties, but the outward appearance of the fruits from which they were extracted was so different that I thought I would send them separately." (*Da Costa*.)

A small tree, with oblong, pointed leaves and compound, fleshy fruits with glabrous tubercled skins and edible, viscous pulp of rather poor flavor; it resembles the common custard-apple, *Annona reticulata*, in habit. Native of the island of Martinique, French West Indies. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2975.)

44658. No. 1.

44659. No. 2.

44660 to 44670.

From Nanking, China. Presented by Prof. Joseph Bailie, of the University of Nanking. Received April 27, 1917.

44660. ACER BUERGERIANUM Miquel. Aceraceæ. Maple.
(*A. trifidum* Hook. and Arn., not Thunb.)

"Collected in open land, Nanking, December, 1916. Chinese name *Ya fêng* (forked maple)." (*Bailie*.)

A large tree, with glabrous branches, 3-lobed, bright-green, papery leaves with entire margins; inconspicuous greenish flowers appearing at the same time as the leaves; and glabrous fruits up to 2 cm. (four-fifths of an inch) in length. (Adapted from *Koidzumi, Journal of the College of Science, Imperial University of Tokyo*, vol. 32, pt. 1, p. 29, pl. 17.)

44660 to 44670—Continued.

44661. ALEURITES FORDII Hemsl. Euphorbiaceæ.

Tung-oil tree.

Collected on a mountain, Chekiang, November 14 to 30, 1916. Chinese name *Yu t'ung*." (*Bailie*.)

"A rapid-growing, broad-leaved deciduous tree which attains a height of 25 to 35 feet. It is said to be comparatively short lived. Clusters of pinkish white flowers are produced just as the leaves begin to come out in the spring and are followed by green or reddish fruits somewhat larger than the fruit of the black walnut. The fruits contain the large nutlike oily seeds from which tung oil, a valuable drying oil, is expressed. The oil constitutes about 24 per cent (by weight) of the seeds, or about 40 per cent of the kernels from which the shells have been removed. The tree appears to be particularly well adapted to the sandy clay soils and climate of northwestern Florida and the adjacent regions of Alabama and Georgia." (*R. A. Young*.)

44662. QUERCUS sp. Fagaceæ.

Oak.

"From Anhwei, November 14 to 30, 1916. Collected by students of Nanking University." (*Bailie*.)

44663. CASTANOPSIS SCLEROPHYLLA (Lindl.) Schottky. Fagaceæ.

(*Quercus sclerophylla* Lindl.)

"From grave land on a mountain, Chekiang, November 14 to 30, 1916. Obtained from natives by students of the university. Chinese name *K'u chu tzü* (bitter acorn)." (*Bailie*.)

An evergreen tree 25 to 65 feet tall, growing in the woods of Hupeh and Chekiang, China, at altitudes up to 1,500 m. (5,000 feet). It is a handsome tree with nearly smooth, dark-gray bark and a densely branched flattened crown. The natives gather the nuts and crush them, making an edible paste resembling bean curd in appearance and the chinkapin in flavor. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, p. 201.)

44664. CATALPA BUNGEI Meyer. Bignoniaceæ.

"From open land, Chekiang, China, November 14 to 30, 1916. Chinese name *Tzü*." (*Bailie*.)

A quick-growing Chinese tree, up to 100 feet in height, with a trunk 10 to 15 feet in circumference a few feet above the ground. The wood, which is strong, light, durable, and nonwarping, resembles walnut to a large extent and is in much demand for fine furniture. The tree might be cultivated in the semiarid sections of the United States where the winters are not too severe. It prefers a porous soil and is easily propagated from suckers which spring up from the roots that are near the surface of the ground. (Adapted from a note of *Frank N. Meyer* under *S. P. I. No. 38254*.)

44665. BELIS LANCEOLATA (Lamb.) Sweet. Pinaceæ.

(*Cunninghamia sinensis* R. Br.)

"Collected on a mountain, Chekiang, November 14 to 30, 1916. Chinese name *Shan shu* (pine tree)." (*Bailie*.)

"This handsome tree is found all over the temperate parts of China from sea level up to 2,000 m. altitude, but does not occur where the winters are severe. It is abundant in Fukien, Hunan, Hupeh, and more especially in western Szechwan, where it is partial to red sandstone and forms pure forests. The trunk is mastlike; and the branches are

44660 to 44670—Continued.

numerous, slender, short, and horizontally spreading, giving a lax pyramidal appearance to the tree. The leaves, usually dark green above, are frequently more or less glaucescent. After trees are felled sprouts spring from the old stumps and develop into new trees. This peculiarity explains why this tree is still common in regions near densely populated areas.

"Cunninghamia is the *Shan shu* of the Chinese and is esteemed the most useful of all their timber trees. The wood is fragrant, soft, and easily worked; and it is extensively employed in all branches of carpentry, in general construction work, for pillars and planking, and as masts for native boats. It is also the principal coffin wood of central and western China, the fragrant properties being considered to act as a preservative. In parts of western Szechwan, notably in the Chienchang Valley, and in the valley of the Tung River a few days' journey west of Fulin, whole forests of this tree were engulfed by an earthquake two or three centuries ago. The wood of these trees is to-day mined and furnishes the most valuable of all coffin material. From these logs, known as *Hsiang-mu* (fragrant wood) or *Yin-chén-mu* (long-buried wood), planks of huge size can be cut, and a coffin made of them sells for a thousand to fifteen hundred ounces of silver. This buried wood is pale brown, close in texture, but easily worked and pleasantly fragrant. Trees of this conifer equaling in size those buried giants can not be found in China to-day except as rare and isolated specimens associated with temples or shrines." (*Sargent, Plantae Wilsonianae, vol. 2, p. 51.*)

44666. LIQUIDAMBAR FORMOSANA Hance. Hamamelidaceæ.

"From open land, Chekiang, November 14 to 30, 1916. Chinese name *Fêng hsiang* (fragrant maple)." (*Bailie.*)

A handsome tree 20 to 40 m. (65 to 130 feet) in height, with a straight trunk, a much-branched head, and, frequently, buttressed roots. The leaves turn to a chestnut brown or red in the autumn and are retained late into the winter. In juvenile plants the leaves are five lobed, while in the adult trees the leaves are only three lobed and are smaller. In Kiangsi the wood is used for making tea chests. This is one of the most widely distributed trees in China, being particularly abundant in western Hupeh. It is cultivated in Japan. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 421.*)

44667. PLATYCARYA STROBILACEA Sieb. and Zucc. Juglandaceæ.

"Collected on a mountain, Anhwei, November 14 to 30, 1916, by students of the university. Chinese name *Hua kuo shu*." (*Bailie.*)

A bush, small tree, or rarely a tree up to 65 feet in height, with thick, dark, and deeply furrowed bark. The branches are moderately thick and form a rounded or flattened head. The leaves, which are 8 to 12 inches long, are composed of 9 to 17 sessile, doubly serrate leaflets; the fruiting cones are oval, brown, and up to 1½ inches in length. In Hupeh, China, a black dye for cotton is prepared from the fruit. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2708*, and from *Sargent, Plantae Wilsonianae, vol. 3, p. 180.*)

44668. QUERCUS sp. Fagaceæ.

Oak.

"From Kiangsi, November, 1916. Collected by Miss Holt." (*Bailie.*)

As many Chinese oaks have proved hardy and desirable trees in the United States, this may also prove of value.

44660 to 44670—Continued.**44669. QUERCUS VARIABILIS** Blume. Fagaceæ.**Oak.**

"Bought from natives, Anhwei, November 14 to 30, 1916. Chinese name *Ma li* (hemp chestnut)." (*Bailie*.)

A large tree, up to 25 m. (80 feet) in height, in mixed woods or forming pure stands at altitudes of 800 to 1,600 m. (2,600 to 5,200 feet) in central and western China. It has handsome, pale-gray, deeply furrowed bark, dark-green, crenately serrate leaves with bristlelike teeth, and almost sessile roundish acorns. This oak has proved hardy in Massachusetts and western New York. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2885, and from *Sargent, Plantæ Wilsonianæ*, vol. 3, p. 219, where it is doubtfully referred to *Q. variabilis*.)

44670. TRACHYCARPUS EXCELSUS (Thunb.) Wendl. Phœnicaceæ. **Palm.**

"From open land in a vegetable garden, Chekiang, November 14 to 30, 1916. Obtained by forestry students of the university. Chinese name *Tsung lü* (tree whose bark furnishes clothes for poor people)." (*Bailie*.)

A tall, robust, unarmed palm, clothed by the old leaf sheaths, with large, fan-shaped, finely cut leaves which eventually become 4 or 5 feet wide. The flowers are small, clustered two to four on tubercles in the leaf axils, and the fruits are roundish drupes. This ornamental palm is native to China, but is cultivated in many places in Asia and will grow in the open in the southern United States as far north as Georgia. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 6, p. 3362, and from *Flore des Serres et des Jardins de l'Europe*, vol. 22, p. 207.)

44671 to 44673. ANNONA (CHERIMOLA × SQUAMOSA) × RETICULATA.
Annonaceæ. Cuatemoya.

From Lamao, Philippine Islands. Cuttings presented by Mr. P. J. Wester, horticulturist in charge of the Lamao Experiment Station. Received May 7, 1917.

The following hybrids were obtained by the pollination of an atemoya (*A. cherimola* × *squamosa*) by a custard-apple (*A. reticulata*). The fruit is well shaped but rather small, about the size of a sugar-apple, with a yellowish green, almost glabrous surface, very thick, tough skin, and white, tender, melting, juicy, subacid, aromatic flesh of excellent flavor. (Adapted from *Westen, Philippine Agricultural Review*, February, 1914.)

44671. No. 3685-1.**44673.** No. 3685-16.**44672.** No. 3685-2.**44674 and 44675. PYRUS spp.** Malaceæ.**Pear.**

From Ningpo, China. Cuttings obtained by Rev. L. C. Hylbert, American Baptist Mission, through Rev. G. W. Sheppard, English Methodist Mission. Received May 3, 1917.

These cuttings were sent in response to a request for propagating material of certain pear trees from the island of Chusan which produce immense fruit. Mr. Hylbert reports that "the cuttings were secured from a gentleman's garden and are said to be beyond price."

44674. No. 1.**44675.** No. 2.

44676. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. Yerba maté.

From Oran, Salta, Argentina. Presented by Mr. S. W. Damon. Received June 30, 1917.

"Var. *alba de Llamas*. For planting these seeds, deep, porous, well-sifted earth should be prepared. The surface of the soil should be perfectly level. Sow in lines fairly well spaced, covering with half an inch of finely powdered earth containing much humus. Keep the planting with not less than 18 per cent or more than 32 per cent moisture. When the first young growth is noted protect it from the direct rays of the sun. Seeds will take from 6 to 12 months to germinate. The young plants need a damp soil and atmosphere and much protection from the direct rays of the sun, as they are very delicate until 2 years old. The plant requires a mean annual temperature of about 72° F. These seeds came from what is considered the best plantation in the world." (*Damon.*)

44677 and 44678.

From Yunnanfu, Yunnan Province, China. Purchased from Mr. Frank Pilson. Received June 25, 1917.

44677. DOCYNIA DELAVAYI (Franch.) C. Schneid. Malaceæ.

"*To-i*. Wild pear." (*Pilson.*)

An ornamental, evergreen, spiny tree, up to 30 feet in height, with glossy, ovate-lanceolate leaves, 2 to 4 inches long, and umbels of white flowers which appear in the spring. The fruit is an ovoid pome about an inch long. The tree is a native of southwestern China and has recently been introduced into the subtropical regions of the United States. The fruits are more or less acid and are used for cooking. They could possibly be improved by selection and hybridization. The tree is propagated by seeds and might possibly be grafted on apple stock. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 2, p. 1063.*)

44678. QUERCUS sp. Fagaceæ.

Oak.

"I sent back to Szemao to get acorns of *Quercus rex*. Talifu is 14 days from here by sedan chair and Szemao 20, so that I found it necessary to enlist the aid of friends in securing these seeds." (*Pilson.*)

Received as *Quercus rex*, but the material does not agree with that of this species previously received.

44679 to 44681. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Guatemala. Bud wood collected by Mr. Wilson Popenoe, agricultural explorer. Received April to June, 1917.

44679. "(Nos. 98, 158, 177. Avocado No. 22.) *Kekehi*. A remarkable little fruit, valuable not only for its earliness but also for its productiveness and good quality. It commences to ripen in December, at least two months before most of the other avocados in the same region. Though small in size, the seed is proportionately small, leaving a good amount of flesh of excellent quality. It has a very long ripening season, which suggests its use as a variety for the home garden.

"The parent tree is growing in a sitio belonging to Santiago Mendoza, in the town of Purula, Department of Baja Vera Paz, Guatemala. The altitude is approximately 5,150 feet. The soil is a heavy clay loam. The tree stands on a slope, in the midst of a small patch of maize (Indian corn). It is about 35 feet in height, with a trunk 2 feet

44679 to 44681—Continued.

thick at the base, branching about 10 feet from the ground. The crown is broad and spreading, but sparsely branched. To judge from the size of the tree it must be at least 30 or 40 years old. It seems to be a vigorous grower, the branchlets being stout, well formed, and of good length. The bud wood furnished by this tree is quite satisfactory, having well-developed eyes which do not show a tendency to drop and leave a blind bud. The tree is uncared for and has much dead wood in it.

"While Purula is scarcely higher than Antigua, it has a colder climate. It is not, however, sufficiently cold to test the hardiness of avocado trees of the Guatemalan race.

"The tree has not been seen in bloom, but probably flowers about February. In good seasons it carries an enormous crop of fruit. This would be expected of a small-fruited variety. The first fruits turn color about the first of December and can then be picked. The height of the season, however, is not until February, at which time the fruits are fully mature. If allowed to remain on the tree, many of them hang until April or May.

"The fruit is pear shaped or obovoid, small, weighing not over 6 ounces (it will probably weigh more when grown under cultivation in California and Florida), somewhat rough on the surface, and maroon colored. The skin is thick and woody. The flesh is yellow, sometimes slightly discolored with fiber streaks, but with no objectionable fiber. The flavor is rich and pleasant. The seed is medium sized in comparison with the size of the fruit. In comparison with the seeds of most other 6-ounce fruits it would be called small.

"The variety may be formally described as follows: Form broadly obovoid to pyriform; size small, weight 5 to 6 ounces, length $3\frac{1}{4}$ to $3\frac{1}{2}$ inches, greatest breadth $2\frac{3}{8}$ to $2\frac{1}{4}$ inches; base tapering, the moderately stout stem, which is $5\frac{1}{2}$ inches long, being inserted slightly obliquely without depression; apex rounded or almost imperceptibly flattened; surface rough, deep dull purple-maroon or purple in color, with rather few small russet dots; skin thick, one-sixteenth of an inch at base, nearly one-eighth of an inch toward the apex of the fruit, coarsely granular and woody in texture; flesh rich cream yellow, changing to pale green near the skin, sometimes marked with fiber traces but without any tough fibers, melting and buttery in texture, of very rich and agreeable flavor; quality very good; seed roundish oblate, small to medium in size, weighing less than 1 ounce, tight in the seed cavity, with both seed coats adhering closely." (*Popenoe*.)

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 130, fig. 26; reprint, 1918, p. 25, fig. 26; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 58, pl. 19.

44680. "(Nos. 99, 159, 178. Avocado No. 23.) *Mayapan*. This variety possesses several excellent commercial characteristics—round form, desirable size (nearly 1 pound), attractive purple color, thick, firm skin, and flesh of excellent quality. In this latter respect it is one of the very best varieties in the collection. The seed is not large and the tree is very productive. It seems a very promising avocado.

"The parent tree is growing in a sitio owned by Arcadio Saguirre, but now occupied by Eusebio Guzman, in the town of Purula, Depart-

44679 to 44681—Continued.

ment of Baja Vera Paz, Guatemala. The altitude of this town is approximately 5,150 feet. The soil is a heavy clay loam, black, very fertile, and retentive of moisture. The tree stands at the rear of a small garden, close to a hedge of chichicaste (*Loasa speciosa*). It is slender, apparently not more than 15 to 20 years old, about 40 feet high, with a trunk 1 foot thick at the base. The crown is slender, but well branched, with an abundance of fruiting wood. The young growths are quite vigorous and shapely, indicating that the variety will probably be a good grower. The bud wood from the parent tree is satisfactory, the branchlets being of good length, round, smooth, with the eyes well placed, strong, and not inclined to fall early. If the young trees show a tendency to grow tall and slender, they can easily be kept in hand by judicious pruning.

"The climate of Purula is colder than that of Antigua, though the altitude is about the same. It is not sufficiently cold, however, to test the hardiness of avocados of the Guatemalan race. It must be assumed that this variety is of average hardiness until it can be put to a test in the United States.

"The flowering season of the parent tree is in March and early April. It blooms profusely and sets a heavy crop of fruit. The crop produced in 1917 from the 1916 blooms was very heavy, and another equally heavy crop was set from the 1917 blooms. The productiveness of the variety gives promise of being well above the average. The ripening season commences about the middle of March and extends to the first of July. It can probably be considered midseason or slightly later than midseason.

"The fruits are of attractive round form, nearly a pound in weight, with a slightly rough surface of purple color. The skin is much thicker than the average, but not very brittle. The flesh is rich yellow in color, absolutely free from discoloration of any sort, dry and oily, cutting like soft cheese. The flavor is exceptionally rich and nutty. The seed is rather small and is tight in the cavity. The size of the fruit conforms admirably to hotel and restaurant requirements, where it is desired to serve a half fruit as a portion, and the quality is so unusually good that it would seem that this variety is of exceptional promise.

"Following is a formal description of the fruit: From spherical to roundish obovoid, sometimes slightly oblique; size medium to above medium, weight 13 to 16 ounces, length $3\frac{1}{2}$ to 4 inches, greatest breadth $3\frac{1}{2}$ to $3\frac{3}{4}$ inches; base rounded or obscurely pointed, the stem rather slender, 7 inches long, inserted obliquely, without depression; apex rounded or slightly flattened obliquely; surface decidedly rough, greenish purple to dull purple in color, with numerous large greenish yellow dots; skin very thick, varying from as much as three-sixteenths of an inch near the stem, where it is thickest, to somewhat more than one-sixteenth of an inch near the apex, coarsely granular in texture, woody, but separating readily from the flesh at the right stage of ripeness; flesh rich cream yellow in color, without fiber discoloration, firm, meaty, of rich and pleasant flavor; quality excellent; seed oblate-spherical to spherical in form, medium sized, weighing $1\frac{1}{2}$ to 2 ounces, tight in the cavity, with both seed coats adhering closely to the smooth cotyledons." (*Popenoe*.)

44679 to 44681—Continued.

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 131, fig. 27; reprint, 1918, p. 25, fig. 27; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 59, pl. 20.

44681. "(Nos. 100, 160. Avocado No. 25.) *Kayab*. This is a variety of excellent quality and desirable shape. It resembles the Florida *Trapp* and the *Chisoy* (S. P. I. No. 43935) of this collection in form and size. Some of the specimens examined had large seeds, but the best ones had seeds which could be termed medium sized or almost small in comparison with the size of the fruit. In small specimens of any variety the seed commonly appears large. This variety was not studied as thoroughly as some of the others, but it is considered well worthy of a trial in the United States.

"The parent tree is growing in the cafetal of Francisco Muus called 'Chiquitop' (Tres Chorros in Spanish), in the edge of the town of San Cristobal, Department of Alta Vera Paz, Guatemala. The altitude is about 4,600 feet. The soil is heavy reddish clay, which is very tenacious when wet. The tree stands among coffee bushes 6 to 8 feet high. It is about 40 feet in height, with the trunk 18 inches thick at the base, branching 12 feet from the ground. The crown is broad and spreading, well branched and dense. The branchlets are rather short, but of good appearance, being well formed and stout. The bud wood is good, but it is difficult to get long bud sticks from the parent tree. The eyes are well developed and do not drop early.

"Varieties growing at this altitude in Guatemala are not subjected to severe frosts; hence, there is no way of telling whether they are hardier than the average until they are tested in the United States.

"The tree probably flowers in late February and March. It is said to fruit heavily, but at the time it was examined in 1917 only a few fruits were left on it. The ripening season is from February to May, which is about the main season for avocados at San Cristobal.

"The fruit is round, about a pound in weight, yellowish green in color, with a moderately thick skin. The flesh is yellow, clear, dry, of very rich flavor, and free from any discoloration. The seed is medium sized in large specimens, being rather large in some of the smaller specimens examined. In many instances the seed is placed to one side of the center of the fruit.

"A formal description of the fruit follows: Form obliquely spherical, sometimes slightly narrowed toward the base; size medium to very large; weight 14 to 20 ounces, length $3\frac{3}{4}$ to 4 inches, breadth $3\frac{5}{8}$ to 4 inches; base slightly flattened, oblique, the stem inserted obliquely without depression; apex obliquely flattened; surface pebbled, most conspicuously so around the base of the fruit, deep green to yellowish green in color, almost glossy with numerous small russet or yellowish dots; skin moderately thick, one-sixteenth to one-eighth of an inch, hard and woody; flesh cream yellow in color, without fiber or discoloration, firm, dry, of very rich flavor; quality excellent; seed medium sized, weighing about 2 ounces, sometimes excentric, tight in the seed cavity, with both seed coats adhering closely to the cotyledons." (*Popenoe*.)

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 132, fig. 28; reprint, 1918, p. 25, fig. 28; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 60.

44682. PERSEA SCHIEDEANA Nees. Lauraceæ.**Coyó.**

From Guatemala. Bud wood collected by Mr. Wilson Popenoe, agricultural explorer. Received April 26, 1917.

"In the mountains of northern and eastern Guatemala there grows a fruit closely resembling the avocado yet sufficiently different in foliage and flower to indicate that it is a distinct species. In eastern Guatemala, around Zacapa, Gualan, Chiquimula, and El Rancho, it is called *shucte*, *chucte*, or sometimes *chaucte*, while in the northern part of the Republic, immediately across the great Sierra de las Minas, it is known under the names *coyó* and *coyoté*. These latter names have been thought by some to indicate two distinct fruits, perhaps distinct species, but an examination of several trees in the Alta Vera Paz shows that they are in reality the same. Apparently the Indians call the cultivated fruit (for it is often grown in their gardens and around their huts) *coyó*, and the wild tree, which is abundant in the mountains, *coyoté*. The suffix *té* in the Kekchi language is said to mean tree; *coyoté* would therefore mean nothing more than *coyó* tree.

"In some sections of the Alta Vera Paz the *coyó* is fully as common as the avocado and seems to be held by the Indians in practically the same high esteem. An American coffee planter who lives in this region tells me that he considers the *coyó* even superior to the avocado in flavor, and after testing it I am inclined to agree with him.

"The *coyó* must be considered, then, an unusually interesting new fruit, but it has certain defects which make it seem, on the whole, inferior to the avocado. It has, for example, a large seed in most cases, and the flesh is sometimes disagreeably fibrous. But it is quite variable, like its relative the avocado, and some *coyós* are much superior to others.

"The *coyó* tree looks, at first glance, much like an avocado tree and usually reaches about the same size. It is distinguishable from the avocado by the character of its leaves which, upon close examination, differ from those of the avocado in form, are larger, and have more or less brownish pubescence on the lower surface, especially along the midrib. The flowers, when seen from a distance, look like those of the avocado.

"The fruits are remarkably similar in general appearance to avocados of the West Indian race, such as are grown in Florida. Like avocados, they vary greatly in form. Most commonly they are pyriform, with a well-defined neck, but they are sometimes obovoid, sometimes broadly pyriform, and sometimes long and slender. They are also quite variable in size, but the majority seem to be from three-quarters of a pound to 1½ pounds in weight. I have heard of *coyós* weighing 2 to 3 pounds. The surface is about as smooth as that of a West Indian avocado and often of similar color, yellowish green, but sometimes it is purplish or bronze. The skin is thicker than that of any of the avocados except those of the Guatemalan race; it is not hard, however, as in the latter, but leathery and pliable. Frequently it adheres to the flesh, which is of a peculiar brownish white color, gives off a milklike juice when squeezed, and is of fine, oily texture like the flesh of an avocado. Usually there are numerous fibers running through the flesh, although some *coyós* are said to be practically free from fiber. The flavor is strongly suggestive of the avocado, being of the same rich, nutty character, but is nevertheless distinct; it has a richness and nuttiness of its own, which suggest to me the flavor of a ripe coconut. The seed is larger in comparison to the size of the fruit than it is in the best of our budded varieties of the avocado, but it is no larger than in many seedling avocados. In general appearance it resembles an avocado seed, but the cotyledons when cut are a dull rose pink instead of whitish. The

flesh often adheres closely to the seed, making it difficult to prepare the coyó for eating. I have seen some fruits, however, in which the two halves could be separated, leaving a cavity in which seasoning can be placed.

"The coyó is used by the Indians of Guatemala in the same manner as the avocado, which is to say that it is eaten out of hand, without the addition of seasoning of any sort, and frequently to the accompaniment of tortillas—thin, round cakes made from Indian corn, which are a staple article of diet throughout this part of Central America. I have not yet experimented to see how the coyó tastes when prepared in salads or seasoned with vinegar, salt, and pepper, but I have found it excellent when diced and eaten in bouillon, as is often done with the avocado by Guatemalans of the upper classes. To me its flavor is decidedly agreeable, and a good coyó, free from fiber and with a seed not too large in proportion to the size of the fruit, would impress me as a worthy rival of the avocado.

"The tree grows under a variety of conditions. In the valley of the Motagua River, near Zacapa and El Rancho, it is found near the banks of streams. The air in these regions is exceedingly hot and dry during a large part of the year, and the hillsides are covered with typical desert vegetation—cacti, euphorbias, thorny leguminous shrubs, and small trees. Contrasted with these conditions, the upper Polochic Valley, in Alta Vera Paz, where the coyó is exceedingly abundant, is a very moist region with rainfall, as the inhabitants state, 'thirteen months in the year.' In this part of Guatemala I have seen coyós at altitudes well above 5,000 feet. Like the Guatemalan race of avocado, it is very abundant from 4,000 to 5,000 feet, but unlike the latter it seems also to do very well at lower altitudes and is found around Zacapa at altitudes of 500 feet above the sea, where the Guatemalan race of avocados is usually replaced by the West Indian.

"To judge from its behavior in Guatemala, the coyó ought to be successful in both California and Florida. During the coming summer I hope to make a search for superior trees and to obtain bud wood for introduction into the United States. The season of ripening is from June to August in the lowlands and from August to October or even November in the highlands. There are thousands of trees in Alta Vera Paz, and it should certainly be possible to find among them a few superior ones well worthy of propagation.

"In the coyó we have a fruit new to North American horticulture, yet one which is grown by the Indians of northern Guatemala as extensively as the avocado and apparently looked upon by them as almost its equal. When good varieties have been obtained and propagated by budding, it seems reasonable to expect that the coyó will find a place in the orchards of the United States throughout approximately the same belt in which the avocado is grown." (*Popenoe*.)

For an illustration of the coyó fruits, see Plate VII.

See also The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 37.

44683 and 44684.

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, agricultural explorer. Received April 26, 1917.

44683. *POLYGALA FLORIBUNDA* Benth. Polygalaceæ.

Chupak.

"(No. 102. From Chitzuhai, near Tactic, Alta Vera Paz. April 17, 1917.) A handsome flowering shrub found in the gardens of the Indians in the settlement called Chitzuhai, about 5 miles north of the town of

44683 and 44684—Continued.

Tactic, in the Department of Alta Vera Paz. Since the altitude is about 6,000 feet, the plant should be slightly hardy, and may succeed in California as well as in Florida. It reaches a height of about 8 feet; its leaves are narrow and about 3 inches long; the flowers are borne in long spikes and are individually about half an inch in diameter and bright purple in color. The plant is used by the Indians in place of soap, the leaves when macerated in water making green suds." (*Popenoe*.)

44684. RONDELETIA RUFESCENS Robinson. Rubiaceæ.

"(No. 103. From Chitzuhai, near Tactic, Alta Vera Paz. April 17, 1917.) A handsome pink-flowered shrub from the mountains north of Tactic, near the settlement of Chitzuhai, Alta Vera Paz, at an altitude of more than 6,000 feet. This plant grows among second-growth timber, where there is an abundance of sunlight. It is slender in habit, reaching a height of 8 feet or more, and bears large corymbs of small, exceedingly fragrant flowers of a delicate shell-pink color. It seems well worthy of a trial in California and Florida." (*Popenoe*.)

44685. ASTILBE TAQUETI Vilm. Saxifragaceæ.

From Paris, France. Plants purchased from Vilmorin-Andrieux & Co. Received May 16, 1917.

A very robust perennial herb, 2 to 2½ feet in height, with tripinnate, finely and doubly dentate leaves, and panicles of reddish purple flowers borne on stout flowering stems in July. The flowering stems are covered with long red hairs which are especially abundant on young growth. The plant may be propagated from the abundant seeds, but if placed near closely related species there would be danger of hybridization. (Adapted from *Rerue Horticole*, December 16, 1916.)

44686 to 44688.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Garden, Chico, Calif., April 21, 1917. Quoted notes by Mr. Meyer.

44686. AMYGDALUS DAVIDIANA (Carr.) Zabel. Amygdalaceæ. **Peach.**
(*Prunus davidiana* Franch.)

"(No. 2328a. Peking, China, December 15, 1916.) Stones of the *davidiana* peach gathered in Chihli Province by various Chinese collectors and purchased from them. To be grown as stock for various stone fruits in the semiarid regions in the United States."

44687. ZIZIPHUS JUJUBA Mill. Rhamnaceæ. **Jujube.**
(*Z. sativa* Gaertn.)

"(No. 2329a. Peking, China, December 16, 1916.) Small dried jujube fruits, selected for good kernels, purchased in the open market at Peking. To be grown for stocks for improved varieties."

44688. DIOSPYROS LOTUS L. Diospyraceæ. **Persimmon.**

"(No. 2331a. Peking, China, December 16, 1916.) Dry *ghoorma* fruits full of seeds, purchased in the open market at Peking. To be distributed among growers of oriental persimmons in semiarid sections of the United States as a drought and alkali resistant stock. Chinese name *Hei tsao* (black jujube), which is a misnomer."



A NEW RELATIVE OF THE AVOCADO, THE GUATEMALAN COYÓ.

(*Persea schiedeana* Nees., S. P. I. No. 44682.)

The coyó, according to Mr. Popenoe, is fully as delicious as the avocado and escaped the search for new fruits until he discovered it at Tactic and sent in cuttings and seeds in 1917. The variety pictured above is said to be very choice. As the tree is tender its cultivation will probably be limited to the tropical zone. Its unusual qualities should recommend it strongly to tropical horticulturists. (Photographed by Wilson Popenoe, Tactic, Guatemala, October 7, 1917; P17363FS.)



THE YAM BEAN AS A COVER CROP.

Coccyzoida kuntzei (P. L. No. 11899)

This yam bean is grown quite generally in the Tropics for its tender turniplike root, which are as sweet and full of water as to be palatable when eaten raw; it is also cooked. The roots grow to the size of a large pumpkin if left in the ground for several years, but the young roots only are really edible. In southern Florida, Mr. Edward Sumner suggested it as a cover crop in the citrus orchards, and Mr. George B. Cellon has demonstrated its usefulness for this purpose. A single seed is planted in the quadrangle between four trees and without extending its roots far from the spot where the seed is planted it covers the ground with a mulch which resembles that made by the velvet bean, but without climbing over the trees. (Prof. Charles A. Piper is on the right; Mr. Cellon on the left.) (Photographed by David Fairchild at George B. Cellon's place, Miami, Fla., March 25, 1919; P2130945.)

44689 and 44690. Poaceæ.**Grasses.**

From Oran, Salta, Argentina. Presented by Mr. S. W. Damon. Received April 20, 1917.

"Large, reedlike, tufted perennial grasses which grow to a height of 8 or 9 feet, forming immense clumps, in the more barren sandy portions of the region where the provinces of Tucuman, Catamarca, and Salta join. They grow in almost pure sand, more or less alkaline, in districts where no rain falls for months at a time, and are readily eaten by cattle and horses. They might prove to be good ornamentals and useful forage crops for the semiarid portions of the southwestern United States."

44689. *CORTADERIA RUDIScula* Stapf.

44690. *SPOROBOLUS* sp.

44691 to 44698.

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received April 26, 1917.

Introduced for the work of the Office of Forage-Crop Investigations.

44691 to 44695. *LATHYRUS* spp. Fabaceæ.

44691. *LATHYRUS* sp.

These seeds were received under the name of *L. undulatus*, but they do not agree with the seeds of that species in the office seed collection.

44692. *LATHYRUS CIRRHOSUS* Seringe.

A glabrous, climbing annual, 4 to 10 dm. (16 to 40 inches) long, with a woody, straight-winged stem; leaves composed of two to three pairs of nearly oblong leaflets, terminated by branching tendrils; purple or pinkish flowers in three to eight flowered loose racemes; and smooth, tawny pods about 2½ inches long, native to the barren slopes of the Pyrenees. (Adapted from X. *Philippe, Flore des Pyrénées*, p. 261.)

44693. *LATHYRUS LAXIFLORUS* (Desf.) Kuntze.

An erect herbaceous plant, native of the island of Crete, with a simple, slender, angled, hairy stem about a foot tall; alternate hairy leaves composed of two oval pointed leaflets, without tendrils; lax racemes of three to five bluish violet flowers; and hairy pods about an inch long. It is said to have a twisted root 1 foot long and 4 inches thick, with white flesh and long fibers. (Adapted from M. *Desfontaines*, in *Annales du Muséum d'Histoire Naturelle*, vol. 12, p. 57, 1908, as *Orobis laxiflorus*.)

Index Kewensis refers this to *Lathyrus hirsutus* L., but Ascherson and Graebner consider it a distinct species.

44694. *LATHYRUS PISIFORMIS* L.

A stout clambering perennial, up to 3½ feet in length, with narrow or broad-winged stem; compound leaves with three to five pairs of nearly ovate leaflets, terminated by rather slender tendrils; dense racemes of small violet flowers; and dark-brown pods about 2 inches long. It is native to central Europe and central and southern Asia. (Adapted from Ascherson and Graebner, *Synopsis der Mitteleuropäischen Flora*, vol. 6, p. 1034.)

44691 to 44698—Continued.**44695. LATHYRUS SYLVESTRIS L.****Flat pea.**

A straggling or climbing European perennial, 3 to 5 feet in length, with a stout, winged stem and a creeping rootstock. It has thick, linear-lanceolate leaflets, rose-colored flowers half an inch long with the wings purple at the summit, and lance-shaped pods 2 to 3 inches long. As an ornamental it is inferior to other perennials, but it grows well on poor, sandy soil, will stand severe frosts and droughts, and is useful as a forage plant and for plowing under in a green state as a fertilizer. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 4, p. 1825.)

Received as *Lathyrus variegatus* Gilib., which is now referred to *L. sylvestris*.

44696. PHALARIS BULBOSA Juslen. Poaceæ.**Canary grass.**

A perennial tufted grass, with shiny leaves about two-fifths of an inch wide and roots penetrating the soil to a depth of nearly 3 feet; it is native to the Mediterranean countries. It is now cultivated in New South Wales, Australia, where it appears to be an excellent permanent winter grass for coastal and tableland districts. Owing to its deep roots it can endure a considerable amount of drought. Seeds are borne very sparsely on short stems thrown up from the center of the crown. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora*, vol. 2, p. 17, and from the *Agricultural Gazette of New South Wales*, November 2, 1916.)

Received as *Phalaris tuberosa* L., but Juslenius's name is earlier.

44697. PHALARIS PARADOXA L. Poaceæ.**Canary grass.**

An erect annual grass, 2½ feet high, often branched from the lower joints, with rough leaves 3 to 7½ inches long and one-sixteenth of an inch wide, and flower panicles appearing as though gnawed below. It is native to the Mediterranean countries and has been introduced into California. (Adapted from *W. L. Jepson, Flora of Western Middle California*, p. 35.)

44698. PHLEUM ARENARIUM L. Poaceæ.**Grass.**

An annual, tufted, erect, or ascending grass, up to a foot in height, with smooth leaves about an inch long and one-sixteenth of an inch wide. It is native to Europe and the northern coast of Africa. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora*, vol. 2, p. 149.)

44699. × RIBES ROBUSTUM Jancz. Grossulariaceæ. Gooseberry.

From Kew, England. Cuttings presented by Sir David Prain, director, Royal Botanic Gardens. Received April 26, 1917.

This hybrid (*R. niveum* × *hirtellum*) is intermediate between the parents. It is a spiny, vigorous shrub, with white or pinkish flowers and black fruits. It was originally received at Kew from the gardener of the King of Denmark, but is of unknown origin. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 5, p. 2964.)

44700. GLADIOLUS OCHROLEUCUS Baker. Iridaceæ. Gladiolus.

From South Africa. Collected in Basutoland and presented by Mr. L. Peringuey, director, South African Museum, Cape Town. Received April 26, 1917.

A South African gladiolus with medium-sized globose corms; a stem up to 3 feet tall, including the inflorescence; and four to six rigid, sword-shaped, strongly ribbed leaves, up to a foot in length, arranged in a basal rosette. The eight to twelve plain creamy yellow flowers occur in lax spikes 6 to 9 inches long, the individual flowers being nearly 2 inches in length. (Adapted from W. T. Thiselton-Dyer, *Flora Capensis*, vol. 6, p. 151.)

44701 and 44702.

From Bogota, Colombia. Presented by Mr. M. T. Dawe, director, Estación Agronomica Tropical de Juan de Dios Carrasquilla, San Lorenzo, Tolima, Colombia. Received April 28, 1917.

44701. DRIMYS GRANATENSIS Mutis. Magnoliaceæ.

"*Casa de anta*. (No. 134. Andes of Bogota.) This is the species of *Drimys* found on the Andes of Bogota." (Dawe.)

A white-flowered evergreen shrub 5 to 12 feet in height, with few branches and oval-oblong leathery leaves with rounded ends. The few-flowered umbels appear near the ends of the branches, and the obovate fruit is berrylike, a quarter of an inch long, with succulent flesh inclosing the numerous seeds. From the crushed leaves a tonic is prepared. The bark is the basis of an aromatic tonic, and the dried fruits are used as a spice. (Adapted from M. A. de Saint-Hilaire, *Plantes Usuelles des Brasiiliens*, pls. 26-28, 1824.)

44702. TERNSTROEMIA MERIDIONALIS Mutis. Theaceæ.

"(No. 135. Andes of Bogota.) A shrub whose seeds afford a scarlet dye." (Dawe.)

An ornamental evergreen shrub with leathery leaves, whitish flowers, and indehiscent fruits containing large seeds. (Adapted from Lindley, *Treasury of Botany*, vol. 2, p. 1132.)

44703 and 44704. HYOSCYAMUS NIGER L. Solanaceæ. Henbane.

From the Office of Drug, Poisonous, and Oil Plant Investigations. To be grown for that office. Received April 18, 1917.

A coarse, clammy, ill-smelling herbaceous plant, up to about 2½ feet in height, with irregularly lobed leaves 3 to 7 inches long, greenish yellow, purple-veined flowers; and circumscissile capsules. The leaves and flowering tops are of medicinal value. It is annual, biennial, or perennial. (Adapted from Bailey, *Standard Cyclopedia of Horticulture*, vol. 3, p. 1629.)

44703. Seeds from wild plants.

44704. An annual variety.

44705. CINNAMOMUM CAMPHORA (L.) Nees and Eberm. Lauraceæ. Camphor tree.

From China. Presented by Prof. Joseph Bailie, of the University of Nanking. Received April 27, 1917.

"Collected in open land, Chekiang, November 14 to 30, 1916. Chinese name *Hsiang chang* (fragrant camphor)." (*Bailie*.)

A moderate-sized, much-branched tree with an enlarged base, up to 40 feet in height. It has alternate, ovate-elliptic leaves which are pinkish on the young growths, and small, yellow flowers. The fruits are drupes about the size of a large pea. It is native to China and Japan, but is cultivated in Florida, the Gulf States, and southern California. From the wood is extracted the commercial camphor. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 773.)

Introduced for comparison with the camphor trees already growing in the South.

44706 and 44707. *RIBES VULGARE* Lam. Grossulariaceæ.

Garden currant.

From Lowdham, Nottingham, England. Plants purchased from J. R. Pearson & Sons. Received April 30, 1917. Notes adapted from catalogue of J. R. Pearson & Sons.

44706. *Knight's Sweet Red.* A very prolific currant with large fruits in evenly ripening bunches. It is less acid than other red currants.

44707. *Wentworth Leviathan.* A vigorous, prolific variety with very large white fruits.

44708 and 44709.

From Cairo, Egypt. Plants presented by Mr. Thomas W. Brown, director, horticultural division, Gizeh Branch, Ministry of Agriculture. Received May 1, 1917. Quoted notes by Prof. S. C. Mason, of the Bureau of Plant Industry.

44708. *FICUS SYCOMORUS* L. Moraceæ.

Sycamore fig.

Var. *Roumi*. "The variety *Roumi* is the large-fruited sort, cultivated for its fruits, as distinguished from the *Kalabi*, or 'dog figs,' having small and worthless fruits. In different parts of Egypt *Balady*, *Sultany*, and *Arabi* are varietal terms synonymous with *Roumi*."

44709. *OLEA EUROPAEA* L. Oleaceæ.

Olive.

"*Tafahi*. From the omda of the village of Fedimine Mr. Brown secured the promise of some rooted sprouts of the Fayum olive varieties for me. These he afterwards obtained and grew in the gardens at Gizeh. The above specimen is one of them.

"The *Tafahi*, or apple olive, is held in the highest repute of the three varieties grown in Fayum, the industry centering around the village of Fedimine. Though reputed as only moderately productive, its large size and fine appearance cause it to be in great demand throughout the Egyptian delta. As the flesh is very soft and buttery when fully ripe it is marketed about November 1, when it begins to color. From the largest ripe fruit found at Fedimine November 20, I made the following description: Fruit deep purplish black with lilac bloom, 4.5 cm. long, 3 cm. broad, broadly ovate with blunt apex terminating in a short, acute tip. There is a rather deep cavity around the stalk, and some fruits show a slight fold. The flesh is about 1 cm. in thickness; the pit is large and rough, with deep longitudinal furrows, about 2 cm. long and 1 cm. broad,

44708 and 44709—Continued.

broadly rounded at the base, obtusely pointed at the apex. The fresh olives are packed in leaves in crates (holding about 3 pecks each) made from the ribs of the date leaf and are pickled by the people of the valley according to their fancy. Pickled *Tafahi* olives were seen by the writer both at Fedimine and in Cairo.

"At present no oil is manufactured from the Fayum olives, but in one of the villages were seen stones of ancient oil mills of beautiful red Aswan granite and no doubt of Roman origin. Their purpose was unknown to the present inhabitants. From this it may be conjectured that the present olive trees of Fayum, as well as those of Dakhleh Oasis, have come down from the time of the Roman occupation during the first century A. D."

44710. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

From Bahia, Brazil. Presented by Dr. V. A. Argollo Ferrão. Received May 4, 1917.

Mulatinho (little mulatto). A Brazilian bush variety of the common kidney bean, cultivated in the coastal States, especially in Sao Paulo, where it matures in 60 days, thus allowing two crops a year. The beans contain a large amount (36 per cent) of starch and are used for human food in much the same manner as the kidney bean. (Adapted from *Journal of Commerce, New York, January 27, 1917.*)

44711. CARAPA GUIANENSIS Aubl. Meliaceæ. Crabwood tree.

From Trinidad, British West Indies. Obtained from Mr. R. O. Williams, curator, St. Clair Experiment Station. Received May 4, 1917.

A tall tree, with compound leaves $1\frac{1}{2}$ feet long, small axillary flowers, and thick-shelled, russet-brown fruits about 3 inches in diameter, containing two to six chestnutlike seeds. The native name in Guiana is *andiroba* (bitter oil), referring to the oil expressed from the seeds. This oil is used by the natives, who rub it into their skin to protect themselves from noxious insects; it is also made into a varnish or lacquer for iron objects, protecting these from rust. From the bark and leaves a decoction is prepared which is a remedy for skin disease; the bark contains an alkaloid termed *carapina*. The tree should be tried as an ornamental in southern Florida and southern California. (Adapted from *J. B. Rodrigues, Hortus Fluminensis, p. 73*, and *note of Dorsett, Shamel, and Popenoe, under S. P. I. No. 36715.*)

Introduced for trial as an insecticide.

44712. CANNABIS SATIVA L. Moraceæ. Hemp.

From Manchuria. Presented by Mr. M. Toyonaga, director, Central Experiment Station, Keijo, Chosen (Korea). Received May 4, 1917.

In Manchuria, where this plant is grown for the oil, the seeds are crushed and steamed, and subjected to great pressure, yielding the oil which the Chinese call *ma tzu yu* (hemp-seed oil). (Adapted from *A. Hosie, Manchuria, p. 188, 1901.*)

Introduced for the Office of Drug, Poisonous, and Oil Plant Investigations.

44713 to 44720. MALUS SYLVESTRIS Miller. Malaceæ. Apple.*(Pyrus malus L.)*

From Ottawa, Ontario, Canada. Cuttings presented by Mr. W. T. Macoun, Dominion horticulturist. Received May 4, 1917. Quoted notes from the Reports of the Horticulturist, Experimental Farms, Ottawa, Canada, 1906 to 1915, which should be referred to for a full account of the development of the remarkable collection of seedlings at the Experimental Farms, Ottawa.

44713. "*Anson* (*Winter St. Lawrence* seedling). Fruit of medium size, roundish, slightly ribbed; cavity of medium depth and width; stem short, stout; basin deep, narrow, wrinkled; calyx closed; skin moderately thick, tough, pale yellow to almost white, thinly splashed and streaked with carmine; the dots obscure; flesh white, fine grained, tender, juicy; core and seeds of medium size; flavor subacid, pleasant, Fameuselike; quality good to very good; season October, probably through November.

"Resembles *Winter St. Lawrence* a little in flavor. Distinctly of the *Fameuse* group. Quite promising, season coming just before *McIntosh* and *Fameuse*."

44714. "*Battle* (*Wealthy* seedling). Fruit above medium to large in size, roundish conic; cavity deep, of medium width; stem short to medium, stout; basin of medium width and depth, almost smooth; calyx closed or partly open; skin moderately thick, tough, pale greenish yellow, well splashed and washed with bright purplish red; the dots few, yellow, distinct; flesh white, tinged with red, firm, crisp, breaking, tender, rather coarse, juicy; flavor briskly subacid, aromatic, raspberrylike; core medium; quality good; season late August to early September; ripens before *Duchess*.

"Handsome in appearance. Resembles *Wealthy* somewhat in outward appearance and flavor. Should make an excellent cooking apple, and is good for dessert."

44715. "*Drumbo* (*Winter St. Lawrence* seedling). Fruit above medium to large in size, conical; cavity deep, of medium width, russeted; stem short, stout; basin deep, medium width, slightly wrinkled; calyx open or partly open; skin thick, moderately tender, pale yellow, well washed and splashed with dark crimson; the dots few, gray, conspicuous; seeds medium size, acute; flesh white, rather coarse, tender, juicy; core medium; flavor subacid, pleasant; quality good; season, late November to February or later. Resembles *Winter St. Lawrence* very much in outward appearance, flesh, and flavor. Evidently a better keeper than *Winter St. Lawrence*."

44716. "*Galetta* (*Wealthy* seedling). Fruit above medium in size, roundish, flattened at both ends; cavity deep, open, slightly russeted; stem short, stout; basin deep, open, wrinkled; calyx closed or partly open; skin thick, moderately tough, pale yellow, washed and splashed with red, with a suggestion of pink, mostly on the sunny side, the dots obscure; flesh white, crisp, tender, juicy; core medium; flavor subacid, pleasant; quality good; season late August to early September. Promising. Of good quality. A good eating apple. Resembles *Wealthy* somewhat in outward appearance."

44713 to 44720—Continued.

44717. "*Jethro* (*Wealthy* seedling). Fruit above medium size, oblate to roundish, conic; cavity medium depth and width; stem short, stout; basin deep, medium width, wrinkled; calyx open; skin moderately thick, moderately tough, pale yellow, washed and splashed with orange, red, and carmine, green about cavity; the dots numerous, yellow, distinct; flesh yellowish, crisp, tender; core medium size, open; seeds medium size, acute; flavor juicy, briskly subacid, pleasant; quality good; season late September to December. Resembles *Wealthy* very much in flesh and flavor."

44718. "*Luke* (*Wealthy* seedling). Fruit above medium to large; oblate to roundish conic; cavity narrow, medium depth, russeted; stem short, moderately stout; basin open, medium depth, almost smooth; calyx open or partly open; skin thick, moderately tough, pale greenish yellow washed with deep red, mostly on sunny side, dots obscure; flesh dull white or yellowish, rather coarse, tender, moderately juicy; core small; flavor subacid, pleasant; quality good; season October and November, probably to middle or late December.

"Resembles *Wealthy* considerably in outward appearance, character of flesh, and flavor. A better keeper than *Wealthy*."

44719. "*Melvin* (*Wealthy* seedling). Fruit of medium size; roundish; cavity deep, of medium width, sometimes lipped; slightly russeted; stem medium to long, slender to moderately stout; basin medium depth and width, smooth, calyx open or partly open; skin thin, tough, pale yellow, well splashed and washed with rather dull red, but attractive, the dots few, pale, distinct; flesh yellow with traces of red near skin, very tender, melting; core medium; flavor briskly subacid, spicy, good; quality good; season middle to end of August.

"Considerably like *Sops of Wine* in outward appearance and quality, but juicier and of much better quality. Also resembles *Wealthy* somewhat in outward appearance and in its aromatic flavor."

44720. "*Rupert* (*Russian* seedling). Fruit above medium in size, oblate; cavity medium depth and width, russeted; stem short, stout; basin medium depth and width, wrinkled; calyx closed; skin thick, tough, pale greenish yellow, sometimes with a faint pink blush, the dots numerous, green, indistinct; flesh white, juicy, tender; core medium; flavor pleasant, briskly subacid, almost acid; quality above medium to good; season early August. As early or earlier than *Tetofsky* and much better in quality. Better in quality than *Yellow Transparent*. Inclined to water-core."

44721. PHASEOLUS LUNATUS L. Fabaceæ.**Lima bean.**

From Concepcion, Paraguay. Presented by Mr. T. R. Gwynn. Received May 7, 1917.

Lynconia. "I named the butter beans *Lynconia* in honor of the estancia in the Province of Buenos Aires from which they originally came. It is a remarkable bean which has been yielding fruit since the middle of last October and is still bearing heavily (March 23)." (*Gwynn*.)

44722 to 44728. GLADIOLUS spp. Iridaceæ.**Gladiolus.**

From Johannesburg, Union of South Africa. Presented by Mr. J. Burt Davy, Agricultural Supply Association. Received May 7, 1917.

44722. GLADIOLUS ALATUS L.

A South African gladiolus with an upright stem 6 to 8 inches in height and with three to four leathery, linear or sword-shaped, stiff leaves, the outermost being twice as long as the others. The five to ten reddish yellow flowers have a fragrance like that of sweetbrier. (Adapted from *Curtis's Botanical Magazine*, vol. 15, pl. 586.)

44723. GLADIOLUS ANGUSTUS L.

A plant with an ascending stem up to 2 feet in height, and narrow, upright leaves with prominent midribs. The white, scentless flowers grow in a lax, one-sided spike. It is native to the Cape of Good Hope. (Adapted from *Curtis's Botanical Magazine*, vol. 17, pl. 602.)

44724. GLADIOLUS BLANDUS Ait.

A South African plant with sword-shaped leaves somewhat shorter than the stem, which is from 6 inches to 2 feet in height and bears three to ten white or reddish tinged scentless flowers. There are many very ornamental horticultural varieties which are easily propagated from seeds and offsets. (Adapted from *Curtis's Botanical Magazine*, vol. 17, pl. 625.)

44725. GLADIOLUS CUSPIDATUS Jacq.

An erect bulbous plant, 2 to 3 feet high, with sword-shaped leaves usually shorter than the stem, and four to eight white or pinkish flowers in a lax, one-sided spike. It is native to the Cape of Good Hope, where it flowers in May and June. (Adapted from *Curtis's Botanical Magazine*, vol. 15, pl. 582.)

44726. GLADIOLUS RECURVUS L.

An ornamental plant, 1 to 3 feet tall, with three linear leaves having prominent midribs. The two to five yellowish purple flowers have a strong violet odor and are produced during April in a lax spike. It is a native of the Cape of Good Hope. (Adapted from *Curtis's Botanical Magazine*, vol. 15, pl. 578.)

44727. GLADIOLUS TRISTIS L.

Avondbloem. A South African plant with two or three linear leaves which are four winged toward the top, due to the comparative size of the midrib, which equals the blades in width. The yellowish flowers, sometimes lightly streaked with purple, give off a very strong fragrance at night, but are practically scentless during the day. (Adapted from *Curtis's Botanical Magazine*, vol. 27, pl. 1098.)

44728. GLADIOLUS UNDULATUS Jacq.

A bulbous plant, with a stem a foot in height, including the spike and several sword-shaped leaves about a foot long. The four to six flowers are milk white marked with red and are produced in a very lax spike. It is native to South Africa. (Adapted from *W. T. Thiselton-Dyer, Flora Capensis*, vol. 6, p. 155.)

44729 and 44730. LACTUCA SATIVA L. Cichoriaceæ. Lettuce.

Seeds grown by Mr. George W. Oliver, of the Bureau of Plant Industry, United States Department of Agriculture, Washington, D. C., from two forms selected by Dr. B. T. Galloway several years ago. Received May 28, 1917.

"Both varieties are identical in growth and are strictly hothouse lettuces. Under good conditions in a cool house they have very large heads from 8 to 10 inches in diameter. Everyone who has sampled them says that they are by far the best forcing lettuces." (*Oliver.*)

44729. "No. 39. White seeded. Parents *Golden Queen* × *Grand Rapids*."

44730. "No. 39. Black seeded. Parents *Golden Queen* × *Grand Rapids*."

44731 to 44739. RAPHANUS SATIVUS L. Brassicaceæ. Radish.

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received May 7, 1917.

44731. Bottle. A large bottle-shaped radish, called *Tokuri* in Japanese. It is about a foot long. (Adapted from *Useful Plants of Japan*, p. 21.)

44732. Long String. A radish with a root over 3 feet long and only 2 or 3 inches in circumference. Very suitable for pickling. (Adapted from *Catalogue of the Yokohama Nursery Co., 1916-17*, p. 77.)

44733. Nerima Long (Mikado). A variety with large, long, cylindrical roots.

44734. All Season. "Called *Tokishiraza* in Japan. It is a very large, long, deep-rooted, snow-white radish which does not extend above the soil; it is always tender and crisp and has a delicious flavor." (*Aggeler & Musser Seed Co., catalogue, 1917*, p. 56.)

44735. Miyashige. A variety found chiefly in Miyashige, Province of Owari, Japan, with a conical root about 1½ feet in length and 3½ inches in diameter. It is very sweet and should be boiled, dried, or pickled. (Adapted from *Useful Plants of Japan*, p. 21.)

44736. Ninengo. A variety with white, thin, hard roots. It is a biennial, and the seeds are sown at the end of spring. (Adapted from *Useful Plants of Japan*, p. 22.)

44737. Six Weeks. No description is available for this variety.

44738. Sakurajima Mammoth. The largest variety of radish known, cultivated chiefly at Sakurajima, Osumi, Japan. It is nearly globular, about 3 feet in circumference in the largest forms, and weighs 20 to 30 pounds. It is eaten raw, boiled, dried, or preserved in salt, and has a sweet, wholesome taste. (Adapted from *Useful Plants of Japan*, p. 20.)

44739. Shogoin. A variety obtained from seed of variety *Horio* sown in Shogoin, Province of Yamashiro, Japan. It is about a foot long, 6 to 7 inches in circumference, and is of excellent flavor. (Adapted from *Useful Plants of Japan*, p. 22.)

44740. JASMINUM MULTIPARTITUM Hochst. Oleaceæ. Jasmine.

From Cape Town, Union of South Africa. Presented by Mr. L. Peringuey, director, South African Museum. Received May 7, 1917.

A climbing, much-branched, ornamental shrub up to 10 feet in height, with opposite, glabrous, ovate to lanceolate leaves nearly 3 inches in length; the solitary, terminal or axillary, fragrant white flowers are about 1½ inches long. It is native to Natal, South Africa. (Adapted from *J. Medley Wood, Natal Plants*, vol. 4, pl. 328.)

44741. ERAGROSTIS SUPERBA Peyr. Poaceæ.**Grass.**

From Johannesburg, Union of South Africa. Presented by Mr. J. Burt Davy, Agricultural Supply Association. Received May 8, 1917.

Introduced for the Office of Forage-Crop Investigations.

"(March, 1917. Pretoria district.) One of the best native pasture grasses on the high veld, extending also to the bush veld, its range being from about 3,500 feet (or lower) to 5,500 feet or more. It is common in sandy soils in British Bechuanaland, where the rainfall is perhaps not more than 10 inches, coming in summer." (*Davy*.)

A perennial tufted grass with culms 2 to 3 feet in length and blades 2 to 8 inches long. It is native to South Africa, where it is widely distributed. (Adapted from *W. T. Thiselton-Dyer, Flora Capensis, vol. 7, p. 622.*)

44742 and 44743. PAPAVER SOMNIFERUM L. Papaveraceæ.**Poppy.**

From the Office of Drug, Poisonous, and Oil Plant Investigations. Seed to be grown for Dr. W. W. Stockberger, Physiologist in Charge. Received May 8, 1917.

An erect annual, with handsome varicolored flowers, which is cultivated in the Orient for opium manufacture. It was originally introduced into the United States for the use of its palatable seeds in confectionery and the preparation of morphia for medicinal purposes. The seeds yield a comestible oil. It is of comparatively easy culture.

44744 and 44745.

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received May 12, 1917.

44744. RHOPALOSTYLIS SAPIDA (Soland.) Wendl. and Drude. Phœnicaceæ. **Nikau palm.**

A graceful tree, sometimes 30 feet tall, with a ringed, green stem and leaves 14 feet in length, which are used by the Maoris in making their huts. The flowers and the flowering axis are both white. The fruit is a vivid red drupe about half an inch long and so hard that the settlers have used them for ammunition. The top of the stem is quite juicy and is sometimes eaten. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 84.*)

44745. CORYNOCARPUS LAEVIGATA Forst. Corynocarpaceæ. **Karaka.**

A handsome evergreen tree with glossy, laurellike, oblong leaves 3 to 7 inches long, erect panicles of small white flowers 4 inches in length, and oblong, orange-colored fruits an inch long. The outside of the fruit is extremely poisonous, but the kernel is edible and forms one of the staple foods of the Maoris, who cultivate the tree for its seeds. The wood has been much used by the natives of the Chatham Islands in the making of canoes. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 233.*)

44746. ENTEROLOBIUM CYCLOCARPUM (Jacq.) Griseb. Mimosaceæ.

From Coro, Venezuela. Presented by Mr. H. M. Curran. Received May 14, 1917.

A lofty, unarmed, leguminous tree with bipinnate leaves, heads of greenish flowers, and leathery, indehiscent, pulpy, curved pods forming complete circles

about 4 inches in diameter. These pods make very good food for cattle and hogs throughout tropical America where this tree is native. The wood is said to be durable and easily worked, and the bark is used for tanning and also as a soap by the Mexicans. The tree would probably make an excellent shade tree for the southern and southwestern United States. (Adapted from *Grisebach, Flora of the British West Indian Islands*, p. 226, and from *Contributions, U. S. National Herbarium*, vol. 5, p. 228.)

44747. *BRASSICA* sp. Brassicaceæ.

From Ningpo, China. Presented by Prof. Victor Hanson, Shanghai Baptist College, Shanghai. Received May 14, 1917.

Chinese name *yu ts'ai* (oil vegetable). Sent in reply to our request for the *yu ts'ai*, said to be the best variety of Chinese cabbage grown at Shanghai. Probably either *Brassica chinensis* or *B. pekinensis*.

44748. *ZIZIPHUS MUCRONATA* Willd. Rhamnaceæ.

From Khartum, Sudan, Africa. Presented by the principal, Central Research Farm, Education Department, Sudan Government. Received May 14, 1917.

A tree 15 to 30 feet tall, with alternate, crenate, or serrate leaves up to 3 inches long, spinelike stipules, and small, greenish flowers in axillary cymes up to an inch in length. The numerous globose dark-red fruits, about half an inch in diameter, are edible and are believed to be the lotus mentioned by Mungo Park as being used for making into bread which tastes like gingerbread. A paste made of the leaves and a decoction of the root are used medicinally; the wood is tough and is used for yoke keys, and the seeds are used for making rosaries. It is native to tropical and southern Africa. Arabic name *Siddir* or *nabbak*. (Adapted from *T. R. Sim, Forests and Forest Flora of Cape Colony*, p. 177, and from *Kew Bulletin of Miscellaneous Information, Additional Series IX, pt. 1*, p. 162, 1908.)

44749 and 44750. *SACCHARUM OFFICINARUM* L. Poaceæ.

Sugar cane.

From St. Croix, Virgin Islands, West Indies. Cuttings presented by Dr. Longfield Smith, director of the experiment station. Received May 15, 1917.

Introduced for the sugar experiment station, New Orleans, La.

44749. *Santa Cruz 12/4*. "I think this would be suitable for Louisiana on account of its rapid growth, early maturing, and richness in saccharose." (*Smith*.)

44750. *Santa Cruz 12/11*. Received without notes.

44751 to 44765.

From Venezuela. Presented by Mr. H. M. Curran. Received May 12, 1917.

44751. *ABELMOSCHUS ESCULENTUS* (L.) Moench. Malvaceæ. Okra.
(*Hibiscus esculentus* L.)

"(From Cumarebe, April, 1917.)" (*Curran*.)

44752. *ACACIA* sp. Mimosaceæ.

"(From Paraguana, April, 1917.) Small tree or low thorny shrub." (*Curran*.)

44751 to 44765—Continued.

44753. CANAVALI OBTUSIFOLIUM (Lam.) DC. Fabaceæ.

"(From Cerro de Santa Ana, Paraguana, April, 1917.) A common vine." (Curran.)

A West Indian leguminous vine with obovate or roundish blunt leaves, purplish flowers an inch in length, and oblong pods up to 6 inches long, containing ovoid, chestnut-colored seeds. (Adapted from *Grisebach, Flora of the British West Indian Islands*, p. 197.)

44754. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. **Watermelon.**

"(From Cumarebe, April, 1917.)" (Curran.)

To be grown for comparison with other varieties.

44755. EUTERPE sp. Phœnicaceæ. **Palm.**

"(From Cerro de Santa Ana, Paraguana, April, 1917.) Ornamental; 30 feet high. Common on top of the mountain." (Curran.)

44756. GOSSYPIUM sp. Malvaceæ. **Cotton.**

"(From La Vela de Coro, April, 1917.) Wild cotton. Grows on arid lands near the sea." (Curran.)

44757. OMPHALOPHTHALMA RUBRA Karst. Asclepiadaceæ.

"(From Paraguana, April, 1917.) A common vine; used for food in Curaçao." (Curran.)

A climbing, shrubby, hairy milkweed with opposite, heart-shaped leaves nearly 3 inches long, and dark-purple, rather small flowers in the axils of the leaves. It is a native of the island of St. Martin, British West Indies. (Adapted from *H. Karsten, Florae Colombiae*, vol. 2, p. 119, pl. 163.)

44758 to 44761. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

44758. (From Paraguana, April 8, 1917.) *Tapirama chicao.*

"Small gray bean, with a yellow eye. An unusual marking for this species." (D. N. Shoemaker.)

44759. (From Miraca, Paraguana, April, 1917.) *Tapirama blanca.*

"Small white bean, very similar to beans received from Ceylon, Burma, and Java." (D. N. Shoemaker.)

44760. (From Paraguana, April, 1917.) *Tapirama colorado.*

"Small red bean, not like any variety of *Lima* in the American trade." (D. N. Shoemaker.)

44761. (From Miraca, Paraguana, April 8, 1917.) *Tapirama amarilla.*

"Small yellow bean; an unusual color for this species." (D. N. Shoemaker.)

44762. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

(From Paraguana, April 8, 1917.) *Tapirama pintada.*

"Small mottled beans similar in marking to *Jackson Wonder* and *Florida Butter*." (D. N. Shoemaker.)

44763. SESAMUM ORIENTALE L. Pedaliaceæ. **Sesame.**
(*S. indicum* L.)

(From Paraguana, April, 1917.) *Tapirama ajonjoli.*

An erect annual plant, 2 to 3 feet high, with ovate-lanceolate leaves, rosy-white flowers, and ovoid-oblong capsules. It is a native of the East Indies and tropical Africa, but is cultivated in tropical America

44751 to 44765—Continued.

and the southern United States. The seeds are very rich in oil, which is expressed and used as a table oil and also medicinally. (Adapted from *Grisebach, Flora of the British West Indian Islands*, p. 458, and from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 538.)

44764. *CLERODENDRUM LIGUSTRINUM* (Jacq.) R. Br. Verbenaceæ.

"(From Paraguana, April, 1917.) A common tree." (Curran.)

44765. *VIGNA CYLINDRICA* (Stickm.) Skeels. Fabaceæ. Catjang.

(From Miraca, Paraguana, April 8, 1917.) *Bonchita*.

An annual rambling vine with three rhomboid-ovate stalked leaflets, white or purplish flowers in twos or threes on long axillary peduncles, and small, erect pods 3 to 5 inches in length. It is probably native to southern Asia, but is now cultivated throughout the Tropics for the seeds and fodder. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 6, p. 3469.)

44766 and 44767. DOLICHOS LABLAB L. Fabaceæ.**Bonavist bean.**

From Georgetown, British Guiana. Presented by Mr. John F. Waby. Received May 19, 1917. Quoted notes by Mr. Waby.

44766. "Var. *macrocarpus*. A natural hybrid of *Park Runner* and *Vilmorin's Stringless*, which undoubtedly will prove a welcome addition to our green vegetables. It bears the largest pod of any of the 'Lablab' class which has yet appeared, and on that account fewer pods will be needed to form a dish. It is prolific; the pods are longer than those of either of its parents and have the width of those of the 'Vilmorin' bean, which till now is the widest known.

"The new bean is a much stronger grower than either of its parents, so will need more room. The seeds should be planted 5 to 6 feet apart. The stakes or trellis for it to climb on should not be more than 5 to 6 feet high, for the convenience of picking for a green vegetable. Use in the same manner as French beans before the seeds are well formed; if allowed to mature, as bonavists generally are, the seeds can be shelled in the same manner, though I consider the young green pods are the most useful, as good green vegetables are scarce."

44767. "Var. *nankinensis*. Small white seeds.

44768. PISTACIA CHINENSIS Bunge. Anacardiaceæ. Pistache.

From China. Obtained by Mr. Edwin S. Cunningham, American consul general at Hankow, through Mr. Nelson T. Johnson, American consul at Changsha. Received April 19, 1917.

(Collected at Ninghwai, Hunan Province, November, 1916.) A beautiful Chinese tree with graceful pinnate leaves which are at first dark red, then glossy green, and finally, in autumn, becoming scarlet, purple, and yellow. Trees of previous introductions have done so well in many parts of our country that we can recommend this beautiful tree for park and avenue planting. Where the winters are not too severe it has withstood temperatures of -4° F. without injury, as at Washington, D. C. It is especially valuable for the Southern and Pacific Coast States when planted in a well-drained situation. Individual specimens sometimes live to be centuries old and attain great size.

44769. MACADAMIA TERNIFOLIA F. Muell. Proteaceæ. Macadamia.

From Sydney, Australia. Purchased from Messrs. Anderson & Co. Received May 14, 1917.

In its typical form this is a tall tree with dense foliage, the leaves being glabrous, shining, oblong or lanceolate, in whorls of three or four, and up to a foot in length. The white flowers are in racemes almost as long as the leaves. The nearly globular fruits, up to an inch in diameter, are thick shelled and contain one or two edible seeds half an inch or more in diameter; these seeds are white and crisp, with a flavor resembling that of the Brazil nut. This tree is cultivated to a small extent in southern California and southern Florida, and it has recently fruited in Cuba, where it appears to thrive. Its ornamental appearance alone makes it worthy of introduction into the warmest parts of the United States. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 4, p. 1938.)

44770 to 44772.

From Allahabad, India. Presented by Mr. William Bembower, horticulturist, Ewing Christian College. Received May 17, 1917.

44770. ANNONA SQUAMOSA L. Annonaceæ. Sugar-apple.

"*Shirifa*. The common type found here." (*Bembower*.)

44771. DIOSPYROS sp. Diospyraceæ. Persimmon.

"This *Diospyros* is, I believe, a native of this region; I found it fruiting in December and January at Etah, in the United Provinces. The fruit is not eaten, but it promises to be a valuable stock for warmer regions or for breeding purposes." (*Bembower*.)

44772. DOLICHOS LABLAB L. Fabaceæ. Bonavist bean.

"A local bean, common in the United Provinces. A very prolific bearer, thriving in the driest seasons and producing long vines." (*Bembower*.)

A twining vine with broadly ovate leaflets, white or pinkish purple flowers, and broad flat pods 2 to 3 inches long. It is a native of India and has been cultivated since ancient times. In tropical and subtropical countries it is usually grown for human food, but in temperate regions it is more commonly known as an ornamental plant. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 1065, and from *Bulletin No. 318, U. S. Department of Agriculture*.)

44773. NANNORRHOPS RITCHIEANA (Griffith) Wendl. Phœnicaceæ. Mazri palm.

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens. Received May 18, 1917.

A low gregarious shrub, usually stemless, but sometimes with a stem 10 to 20 feet in length. The leaves, which are 2 to 4 feet long and of a grayish green color, are beaten with mallets to remove the fiber, which is used in making mats, baskets, etc. The fruit is a nearly round, 1-seeded drupe. The reddish brown wool of the petioles is impregnated with saltpeter and used as a tinder for matchlocks. This palm is a native of Baluchistan and Mekran, where it ascends to 5,500 feet. In Europe it grows best in a well-drained sandy loam and is propagated by seeds and offsets. (Adapted from *E. Blatter, Journal Bombay Natural History Society*, vol. 21, p. 72.)

44774 to 44776.

From Guatemala. Collected by Mr. Wilson Popenoe, agricultural explorer. Received May 24, 1917. Quoted notes by Mr. Popenoe.

44774. *ANNONA TESTUDINEA* Safford. Annonaceæ.

Tortoise-shell custard-apple.

"(No. 123a. From the city of Guatemala, May 15, 1917.) The tortoise-shell custard-apple, from the town of El Rancho, in eastern Guatemala. It may not have been grown at this place, as it was purchased in the market, but it was probably grown somewhere in the immediate vicinity.

"This interesting anona belongs to the section *Chelonocarpus*, or hard-shell custard-apple group, established by Safford (Journal of the Washington Academy of Sciences, vol. 3, no. 4, Feb. 19, 1913). The tree, which has not been seen by me, is described as 12 to 15 meters high, with oblong or oblong-elliptic leaves, acuminate at the apex, and 25 to 35 cm. long.

"The fruit is more or less globose in form, about 4 inches in length, with a hard shell divided on the surface into polygonal areoles by slightly raised ridges. It strongly resembles the common custard-apple, being dull green and somewhat pruinose. The seeds, also, are quite different from those of the common custard-apple (*Annona reticulata*), being considerably larger and pointed at the apex. The flesh is white, soft, watery, free from the grittiness which is so objectionable in *A. reticulata*, sweet, and of pleasant flavor. The pulp does not adhere to the seeds in the ripe fruit.

"This species seems worthy of a trial in southern Florida. It will probably be too tender for cultivation in California, except in the most favored locations, such as Santa Barbara."

44775. *PHYLLOCARPUS SEPTENTRIONALIS* Donn. Smith. Cæsalpiniaceæ.

"(No. 124a. From El Progreso; sent from the city of Guatemala, May 15, 1917.) *Flor de mico* (monkey flower). A magnificent flowering tree found in sandy loam along watercourses near El Progreso, in eastern Guatemala, at altitudes of 1,500 to 2,000 feet. It is of broad, spreading habit, reaching a height of 40 to 50 feet, and is semideciduous at the time of flowering, which is in January and February.

"The leaves are compound, composed of three or four pairs of alternate leaflets oblong-elliptic to obovate in form, an inch to 1½ inches in length, rounded to acute at the apex, glabrous, and light green in color. During the flowering season the tree is a mass of crimson-scarlet flowers, which are produced in small clusters and are individually about an inch broad, with a tuft of crimson stamens up to 2 inches long. When in flower the tree may be compared to the royal poinciana, but the flowers are individually much smaller, and the color is deeper than in the poinciana. This tree should be given a trial in southern Florida, where it seems likely to succeed, and also in the most favored sections of southern California. As it grows along the banks of streams, it will probably demand a good deal of water."

44776. *PERSEA SCHIEDEANA* Nees. Lauraceæ.

Coyó.

"(No. 125a. From the city of Guatemala, May 15, 1917.) *Coyó*, *shucte*, or *chucte*. Seeds from specimens purchased in Zacapa. It is still too early for this fruit to be abundant, but the first of the season are now commencing to appear in the lowlands around Zacapa. The ones from which these seeds were taken were slender pyriform, rather pointed at the apex, over 5 inches long, and about 10 ounces in weight.

44774 to 44776—Continued.

The skin was light green, thicker than in an avocado of the West Indian type, while the flesh was pale brown, almost free from fiber, and of very nutty flavor. The seed was large in comparison with the fruit."

See also S. P. I. No. 44682 for previous introduction and description.

44777 and 44778. Gossypium spp. Malvaceæ. Cotton.

From Cristobal, Canal Zone. Presented by Mr. S. P. Verner. Received April 20, 1917.

44777. Sample No. 1.

44778. Sample No. 2.

44779 and 44780. Pandanus spp. Pandanaceæ. Screw pine.

From Honolulu, Hawaii. Plants presented by Mr. Joseph F. Rock, botanist, College of Hawaii. Received May 29, 1917.

44779. PANDANUS TECTORIUS SINENSIS Warb.

A much-branched tree 20 feet or more high, with a flexuous trunk supported by aerial roots. The light-green leaves are linear-lanceolate, terminated by a long flagellum, and are furnished with marginal spines. The variety differs from the species in having smaller leaves and larger marginal spines. (Adapted from *Bailey, Standard Cyclopedic of Horticulture*, vol. 5, p. 2450, and from Warburg, in *Engler, Pflanzenreich*, vol. 4, pt. 9, p. 48.)

44780. PANDANUS ROCKII Martelli.

"I brought back from Palmyra Island a number of seeds of *Pandanus rockii*. It grows in actual salt water below the low-tide mark." (Rock.)

A slender, erect tree, 8 to 10 m. (26 to 33 feet) in height, with bright-green leaves, large, wedge-shaped fruits 8 cm. (3 inches) long and 6 cm. (2½ inches) broad at the apex. It was originally collected on Holei Islet, Palmyra Island, in July, 1913. (Adapted from *Bulletin No. 4, College of Hawaii Publications*, p. 42, 1916.)

44781 to 44783. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Guatemala. Bud wood collected by Mr. Wilson Popenoe, agricultural explorer. Received May to June, 1917. Quoted notes by Mr. Popenoe.

44781. "(No. 117. Avocado No. 29. From the finca Santa Rosa, Antigua.) *Katun*. A small, handsome avocado from the finca Santa Rosa in Antigua, Guatemala (altitude 5,100 feet). The parent tree ripened an excellent crop of fruit in the spring of 1917. A few fruits of this variety which were examined had a slightly bitter taste. It is not known whether this is a characteristic of the variety or not, but it does not seem advisable to make a general distribution until this point can be determined.

"Technically the fruit may be described as follows: Form broadly obovoid, oval, or oblong-oval; size below medium to medium, weight 10 to 14 ounces, length 3½ to 4 inches, breadth 3 to 3½ inches; base rounded to bluntly pointed, the stem inserted somewhat obliquely without depression; apex obliquely flattened, though not markedly so, slightly depressed around the stigmatic point; surface nearly smooth to lightly pebbled, glossy purplish black in color, with numerous small to large yellowish dots; skin rather thin, one-sixteenth of an inch or slightly

44781 to 44783—Continued.

less; flesh rich yellow, almost golden yellow, pale green near the skin, free from fiber or discoloration, and of fairly rich flavor, with sometimes a trace of bitterness; quality doubtful; seed small to medium in size, spherical, not over 1 ounce in weight, tight in the cavity. Ripens midseason, March to May at Antigua."

44782. "(Nos. 118, 142, 228. Avocado No. 27.) *Cabnal*. A very productive variety whose fruits are of pleasing round form, good size, and rich flavor. It gives promise of being somewhat later in ripening than most other Antiguan varieties.

"The parent tree is growing in a sitio occupied by Atanasio Salazar in the outskirts of Antigua, Guatemala, a short distance beyond the first kilometer post on the Guatemala road. The altitude is approximately 5,100 feet. The tree stands beside a small stream, with several jocote trees (*Spondias mombin* L.) close around it. Its age is unknown, but it appears to be at least 25 years old, perhaps more. It stands about 30 feet high, the trunk, about 15 inches thick at the base, giving off its first branches 10 feet above the ground. The crown is rather broad, dense, and well branched. The young branches are erect, stout, stiff, and well formed, indicating that the tree is a vigorous grower. The wood is not unduly brittle. The bud wood is excellent, the branches being of good length with the buds well placed. The eyes are large, well developed, and show no tendency to fall and leave a blind bud.

"The climate of Antigua is not cold enough to test the hardiness of Guatemalan avocados, but it may reasonably be assumed that this variety is of average hardiness for the Guatemalan race.

"The flowering season is late February and March. The tree produced a heavy crop of fruit from the 1916 blooms and set an equally heavy crop in March, 1917, to be ripened in 1918. The bearing habits of this variety give promise of being excellent. The fruit ripens in March and April, but can be left on the trees until June or even later. The ripening period may be termed midseason to late.

"The fruit is round, weighing three-fourths of a pound to a pound, rather rough, and dark green or yellowish green externally, with a skin of moderate thickness. It is attractive in appearance and of convenient and desirable size and form. The flesh is cream yellow, very oily in texture, and of rich flavor. There is a peculiar nuttiness about the flavor which is not found in the other varieties of this collection. It may, perhaps, be said to suggest the coconut. The seed is variable in size, but on the average is rather small for a round fruit. It is tight in the cavity.

"A formal description of the fruit is as follows: Form spherical; size below medium to above medium; weight 10 to 16 ounces, length $3\frac{1}{4}$ to $3\frac{7}{8}$ inches, breadth $3\frac{1}{4}$ to $3\frac{3}{4}$ inches; base rounded, the slender stem inserted slightly to one side without depression; apex flattened and slightly depressed around the stigmatic point; surface pebbled, usually rather heavily so, dull green in color, with a few small yellowish dots; skin thick, about one-eighth of an inch, coarsely granular toward the flesh, hard and woody; flesh rich cream yellow in color, with no fiber and only very slight discoloration, pale green near the skin, fairly dry, and of rich, nutty flavor; quality very good; seed rather round or

44781 to 44783—Continued.

oblate, medium sized, varying from 1 to 2 ounces in weight, tight in the cavity, with both seed coats adhering closely to the cotyledons."

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 134, fig. 30; reprint, 1918, p. 26, fig. 30; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 62, pl. 21.

44783. "(Nos. 122, 143. Avocado No. 28.) *Cantel*. The parent tree of this variety is just coming into bearing and produced but few fruits in 1917. While it is too early to know definitely what its bearing habits will be, the character of the fruit is so unusual as to make it worth while to test the variety in the United States. Most round avocados have a medium-sized or large seed. This one, however, has an unusually small seed, and if the variety proves desirable in other respects it will be well worth cultivating. In quality it is good.

"The parent tree is growing in the finca La Candelaria, in Antigua, Guatemala. The altitude is approximately 5,100 feet. The tree has been planted to shade coffee bushes and is still young, its age not being more than 5 or 6 years. It is tall and slender in habit, about 20 feet high, with a trunk 6 inches thick at the base. As is customary in fincas, the tree has not been allowed to branch low, the first branches being more than 6 feet from the ground. The growth looks unusually strong and healthy, the young branchlets being stout, long, stiff, and well formed. The bud wood is excellent, having the buds well placed and vigorous.

"Little can be determined regarding the flowering and fruiting habits of the tree at this early day. When it was first seen, early in May, 1917, it had only three fruits on it. It may have borne more this year, as the crop had already been harvested from many of the trees in the finca. The ripening season is probably March to May.

"The hardiness of the tree can not be determined until it is tested in the United States, as it is never very cold in Antigua.

"The fruit is round, about a pound in weight, green, with a moderately thick skin. The flesh is of good color and quality and in quantity much greater than in the average round avocado, since the seed is quite small.

"The variety may be described as follows: Form oblate; size medium, weight 16 ounces, length $3\frac{1}{2}$ inches, breadth $3\frac{1}{4}$ inches; base slightly flattened, the long, slender stem inserted without depression almost in the longitudinal center of the fruit; apex flattened, slightly depressed around the stigmatic point; surface pebbled, deep yellow-green in color, with numerous minute yellowish dots; skin not very thick for this race, one-sixteenth of an inch or slightly more, hard, granular toward the flesh; flesh cream colored around the seed, becoming pale green close to the skin, very slightly discolored, with brownish fiber tracings, but with no fiber; flavor rich and pleasant; quality very good; seed very small for a round fruit, oblate, weighing less than 1 ounce, tight in the cavity, with both seed coats adhering closely to the cotyledons."

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 135, fig. 31; reprint, 1918, p. 26, fig. 31; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 63.

44784. CAMPOMANESIA FENZLIANA (Berg.) Glaziou. Myrtaceæ. Guabiroba.

From Lavras, Minas Geraes, Brazil. Presented by Mr. B. H. Hunnicutt, director, Escola Agricola de Lavras. Received May 18, 1917.

"A small Brazilian tree with foliage remarkably similar to that of some of the European oaks. It is usually 20 to 25 feet in height, though occasionally taller. The fruits greatly resemble small guavas, being orange-yellow, oblate in form, and up to an inch in diameter. The skin is thin and incloses a layer of granular, light yellow pulp which has a flavor somewhat stronger than that of the guava. The fruits are used principally for making jams and jellies. The tree should prove suitable for southern California and southern Florida." (Note of *Dorsett, Shamel, and Popenoe.*)

See also S. P. I. Nos. 37834 and 44086 for previous introductions.

44785. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Guatemala. Bud wood collected by Mr. Wilson Popenoe, agricultural explorer. Received June 8, 1917.

"(Nos. 132, 213. Avocado No. 12.) *Pankay*. This variety has been included in the set primarily for its probable hardiness. The parent tree is growing at an altitude of 8,500 feet, which is more than a thousand feet above the zone in which citrus trees are seen in Guatemala. Avocados are rarely found at this altitude. Several other avocado trees in the same town (Totonicapam) had been badly injured by a recent frost at the time *Pankay* was selected, but this variety had escaped practically untouched. How much may be due to situation or other circumstances, however, is not known, and not too much confidence should be placed in the superior hardiness of this variety until it has been thoroughly tested in Florida and California. Since, in addition to its probable hardiness, it is a fruit of very good quality, it can be strongly recommended for trial in the United States.

"The parent tree is growing in the patio of Jesusa v. de Camey, corner of Calle Cabanas and 10a Avenida Norte, Totonicapam. The altitude of this town is approximately 8,500 feet, perhaps a little higher. The situation is somewhat sheltered, since the tree stands in the patio of a house close to the north wall. Since the top of the tree, however, extends 10 feet or more above the roof of the house, the protection can not be of great importance, except from one point of view: The tree may have been effectively protected when young, being thus enabled to develop uninjured during the first few years of its growth, after which it was better able to withstand severe frosts. The age of the tree is said to be about 25 years; it stands 40 feet high, with a broadly oval, dense crown, the top of which has been cut out to avoid danger of its breaking in high wind and falling upon the tile roof of the house. The trunk is about 20 inches thick at the base, dividing 8 feet from the ground to form two main branches, which give off secondary branches at 20 feet from the ground. While the tree appears to be vigorous and hardy, it may be found somewhat difficult to propagate, as it does not make the best type of bud wood. The eyes are not plump, but somewhat slender, with the outer bud scales falling early, and the bud itself shows a tendency to fall at an early stage. The wood seems to be rather brittle.

"The flowering season is late April and May. The tree is quite productive, bearing its fruits often in clusters. It produced a good crop from the 1915 blooms and another good one from the 1916 blooms. Owing to the great eleva-

tion of Totonicapam and the consequent lack of heat, the fruits are very slow in reaching maturity. The season of ripening is from September until the end of the year, but the fruits which ripen at this time are those from the previous year's bloom—that is, flowers which appeared in May, 1916, developed fruits which were not fully ripe until September or October, 1917.

"The fruit is of medium size, of attractive pyriform shape, smooth, and green in color. The flesh is of good quality, free from fiber, and the seed is comparatively small. It can be considered a fruit of very good quality and desirable from other points of view than that of its probable hardness.

"Following is a formal description of this variety: Form pyriform, rather slender, and slightly necked; size medium, weight 12 ounces, length $4\frac{1}{4}$ inches, greatest breadth 3 inches; base tapering, narrow, the stem inserted almost squarely without depression; stem $3\frac{1}{2}$ inches long, stout; apex rounded, slightly depressed around the stigmatic point; surface smooth or nearly so, light green and almost glossy, with numerous yellow dots; skin moderately thick, about one-sixteenth of an inch, woody and brittle; flesh deep-cream color, changing to pale green near the skin, free from fiber, and of very rich flavor; quality excellent; seed rather small, conical, weighing about $1\frac{1}{2}$ ounces, tight in the cavity, with both seed coats adhering closely." (*Popenoe*.)

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 125, fig. 21; reprint, 1918, p. 24, fig. 20; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 50.

44786. *CRYPTOSTEGIA GRANDIFLORA* R. Br. Asclepiadaceæ.

Palay rubber.

From Old Fort, New Providence, Bahamas. Presented by Mr. W. F. Doty, American consul, Nassau, Bahamas, who secured it from Dr. Charles S. Dolley. Received May 24, 1917.

A twining shrub, native of India, but cultivated in many places in the Tropics for the rubber obtained from the sap. It has opposite, elliptic leaves and terminal cymes of large reddish purple flowers which bloom all the year. The leaves and stems contain an abundance of latex which yields a quantity of rubber estimated at 2 per cent of the weight of the fresh plant. From the bast fiber of the inner bark a good quality of wrapping paper has been made. The seed coma furnishes a silky floss which can be made into an excellent felt. Propagation is by seeds. (Adapted from C. S. Dolley, *On the Occurrence of Palay Rubber in Mexico*, *India-Rubber Journal*, May 20, 1911.)

44787 to 44789.

From Ranchi, India. Presented by Mr. A. C. Dobbs, Deputy Director of Agriculture, Chota Nagpur Division. Received May 24, 1917.

44787. *BRASSICA CAMPESTRIS* SARSON Prain. Brassicaceæ. Sarson.

An erect annual of rigid habit, cultivated in many places in India for the seeds. There are two forms—one with erect pods and one with pendent pods, the former being the true *sarson* and the latter being found commonly only in northern Bengal and eastern Tirhut. The seed is sown in September, either broadcast or in parallel lines, usually with wheat or barley, and the plants are cut soon after the harvest of the associated crop. *Sarson* is very liable to be attacked by insects and

44787 to 44789—Continued.

blight and is quite susceptible to climatic vicissitudes. (Adapted from Watt, *Commercial Products of India*, p. 176.)

44788. *BRASSICA NAPUS DICHOTOMA* (Roxb.) Prain. Brassicaceæ. Tori.

An annual plant cultivated throughout India, especially in the lower provinces. There are two forms—one tall and rather late, the other shorter and very early. The seeds are usually brown and the same size as those of the *sarson* (*Brassica campestris sarson*). The oil content is very variable. (Adapted from Watt, *Commercial Products of India*, p. 178.)

44789. *GUIZOTIA ABYSSINICA* (L. f.) Cass. Asteraceæ.

An annual composite, native of tropical Africa, but cultivated in most of the provinces of India for the oil-producing seeds. The seed is sown from June to August and harvested in November and December. Light sandy soil is generally chosen, and the seed is drilled in rows 11 to 13 inches apart. The oil is pale yellow or orange, nearly odorless, and has a sweet taste. It is used for making paints, for lubrication, and for lighting purposes. (Adapted from Watt, *Commercial Products of India*, p. 625.)

44790 to 44792. *PHYSALIS PERUVIANA* L. Solanaceæ. Poha.

From Dundas, New South Wales, Australia. Presented by Mr. Herbert J. Rumsey. Received May 29, 1917. Quoted notes by Mr. Rumsey.

"The green and purple varieties and the crosses between them make a muddy looking jam with a peppery taste, distasteful to many; but the yellow variety makes jam of a clear amber color, which is almost free from the hot taste."

44790. "*Large Purple*. Grown from seed received recently from Livingston's. This appears to be the original type of the fruit."

44791. "*Phenomenal Large Green*. A type frequently in evidence among our seedlings."

44792. "*Phenomenal Large Yellow*. The result of our selection for six or seven years. The fruit from which this was saved is the type at which we are aiming."

44793 and 44794.

From Mustapha, Algiers, Algeria. Presented by Dr. L. Trabut. Received May 26, 1917.

44793. *ALLIUM TRIQUETRUM* L. Liliaceæ.

A bulbous plant with a 3-angled stem, common on the coast of Algeria. In its usual surroundings this plant is a rather dwarfed weed of dry texture, but it has been found that when it is transplanted to good garden soil with plenty of fresh water it produces, during the winter, large plants with white, tender, and succulent underground parts. If the green leaves are removed, the rest of the stem forms a delicate vegetable with no odor of garlic. (Adapted from Trabut, *Revue Horticole*, July 1, 1913, p. 311.)

44794. *GOSSYPIUM* sp. Malvaceæ. Cotton.

"This cotton is derived from a *Caravonica* hybrid crossed with *Mit Afifi*. For several years it has proved very prolific and fairly early. It

44793 and 44794—Continued.

has long, silky fiber of first-rate quality. It bears little or nothing the first year, but the following year is covered with bolls. It should be planted at the rate of three to five thousand plants for each 2 acres. It may remain in place four or five years. The seeds should be collected from the best plants, as this hybrid is still incompletely fixed. The plants should be started in a nursery and planted the second year." (*Trabut.*)

Caravonica is supposed to be a hybrid between kidney cotton, *Gossypium* sp., and *G. barbadense*; *Mit Afifi* is usually referred to *G. barbadense*.

44795 to 44800.

From Venezuela. Presented by Mr. Henry Pittier. Received May 29, 1917. Quoted notes by Mr. Pittier.

44795. *AMYGDALUS PERSICA* L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

"(No. 7112. From Caracas, March, 1917.) A small peach, with thin, acidulous flesh, sold in the market at Caracas; collected in the neighboring mountains."

44796. *BROMELIA CHRYSANTHA* Jacq. Bromeliaceæ.

"(No. 7111. From Caracas, March, 1917.) This has been called *Bromelia chrysantha*, but it may be simple *B. pinguin*. The fruit, which is sweet acidulate and quite agreeable to the taste when mature, is sold in the market."

44797 to 44799. *GOSSYPIUM* sp. Malvaceæ. **Cotton.**

Introduced for the Office of Crop Acclimatization and Adaptation Investigations.

44797. "(No. 7110. From Siquire Valley, Miranda, April, 1917.) A deciduous shrub of pyramidal habit, with 4-locked fruits. It grows among bushes on alluvial flats."

44798. "(No. 7094. From Caracas, March, 1917.) Cultivated in a garden."

44799. "(No. 7109. From Caracas, March, 1917.) A pyramidal perennial shrub, 2 to 3 meters (7 to 10 feet) high, growing around houses, bushes, etc."

44800. *SOLANUM* sp. Solanaceæ.

"(No. 5972. From Caracas.) An herbaceous trailing plant, bearing edible fruits; desirable for cultivation in cool, shady places in a mild climate."

44801. *ANNONA* (*CHERIMOLA* × *SQUAMOSA*) × *RETICULATA*. **Annonaceæ. Cuatemoya.**

From Lamac, Philippine Islands. Cuttings presented by Mr. P. J. Wester, horticulturist in charge of the Lamac Experiment Station. Received May 19, 1917.

"No. 3685-11."

See S. P. I. Nos. 44671 to 44673 for previous introductions and description.

44802. MICROLAENA STIPOIDES (Labill.) R. Br. Poaceæ.**Meadow rice-grass.**

From Sydney, New South Wales, Australia. Purchased from Messrs. Arthur Yates & Co. (Ltd). Received May 31, 1917.

These seeds were introduced for the Office of Forage-Crop Investigations.

A perennial, erect or ascending grass, 1 to 2 feet in height, with usually rather short and very acute leaves, narrow panicles 3 to 6 inches long, and 1-flowered spikelets. It keeps beautifully green throughout the year and will live in poor soil, provided it be damp. It bears overstocking better than any other native grass and maintains a close turf. It is native in Australia and also in New Zealand. (Adapted from *Bailey, Queensland Flora*, pt. 6, p. 1872, and from *Maiden, Useful Native Plants of Australia*, p. 94.)

44803. SOLANUM TUBEROSUM L. Solanaceæ.**Potato.**

From Allahabad, India. Presented by Mr. William Bembower, horticulturist, Ewing Christian College. Received May 31, 1917.

"Potato seed produced on the farm of the Agricultural Department of the Ewing Christian College, Allahabad. Gathered in March, 1917. The variety or varieties we have here are of inferior quality generally, and we find a little difficulty in carrying them over the hot season, but we are trying to improve the local kinds." (*Bembower*.)

44804 and 44805.

From Yih sien, Shantung, China. Presented by Rev. R. G. Coonradt. Received June 1, 1917.

44804. CANNABIS SATIVA L. Moraceæ.**Hemp.**

"The hemp is planted here in March, in rich, black soil, and often irrigated. From the fiber taken from the outside of the stalk our best rope is made." (*Coonradt*.)

For the use of the Office of Fiber Investigations.

44805. POLYGONUM TINCTORIUM Lour. Polygonaceæ.

"The 'blue plant' may be common in America. When mature, it is put through a process to obtain the dye with which all of our blue clothes are colored." (*Coonradt*.)

An annual herb commonly cultivated in dry fields in China and Japan, growing to a height of 1 to 2 feet. The leaves are variable in shape, ranging from long narrow to short and oval, and the pink flowers are borne in spikes. The dried leaves are made into "indigo balls," from which the dye is obtained. (Adapted from *Useful Plants of Japan*, p. 101.)

44806. CANAVALI GLADIATUM (Jacq.) DC. Fabaceæ. Sword bean.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, horticultural division, Gizeh Branch, Ministry of Agriculture. Received June 1, 1917.

A robust, woody, perennial climbing plant, with leaves composed of three roundish leaflets, 2 to 6 inches long, and axillary racemes of dark-purple flowers. The scimitar-shaped pods are about a foot long and contain numerous red or white seeds which resemble large beans. The young pods are sliced and boiled for table use and are also pickled. Propagation is by seeds. (Adapted from *Lindley, Treasury of Botany*, vol. 1, p. 212, and from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 207.)

44807. ORYZA SATIVA L. Poaceæ.**Rice.**

From Chosen (Korea). Presented by Miss Katherine Wambold, Yunmotkol, Keijo, through Mrs. M. W. Spaulding, Washington, D. C. Received June 1, 1917.

"*Pepsi or pay*. Planted in water; when about a month old it is transplanted to deeper water; then, later, weeding is done, fertilizing having been done before the seed is planted. It is a difficult crop to raise." (*Wambold*.)

44808 to 44814.

From Chile. Presented by Mr. G. F. Arms, Coquimbo, Chile. Received June 2, 1917. Quoted notes by Mr. Arms.

44808 to 44813. FRAGARIA CHILOENSIS (L.) Duchesne. Rosaceæ.

Strawberry.

Introduced for the Office of Horticultural and Pomological Investigations.

44808. "Wild strawberries from near Temuco, Chile; secured by Mr. George T. Smith."

44809. "Conical strawberries from Mr. W. D. Carhart, Concepcion, Chile."

44810. "*Montañescas* (?). Common large berries, with deep-set seeds, from Mr. W. D. Carhart, Concepcion, Chile."

44811. "Red, shining seeds. From Tome, near Concepcion. Secured by Mr. W. D. Carhart."

44812. "*Montañescas*. Deep-set seeds; from Mr. W. D. Carhart."

44813. "Cultivated strawberries, with large seeds well on the surface of the berry. From 'Granideros,' the farm of Mr. Celio Rioseco, at Collepulli, south of Concepcion, Chile."

44814. MESEMBRYANTHEMUM CHILENSE Molina. Aizoaceæ.

Doca.

"*Doca*, or *frutillas del mar* (strawberries of the sea). Collected on the sea beach near Serena, Chile."

A glabrous, succulent plant about a meter ($3\frac{1}{4}$ ft.) in length, with opposite, triangular, green leaves from 4 to 7 cm. ($1\frac{3}{8}$ to 3 in.) long, solitary purplish flowers, and fleshy fruits. It grows flat in the sand on the sea-coast from Coquimbo to Rio Bueno, Chile. The fruit is edible, having an agreeable taste, but if eaten in abundance has a purgative effect. (Adapted from *A. Murillo, Plantas Medicinales du Chili*, p. 99.)

44815. CUCUMIS MELO L. Cucurbitaceæ.**Muskmelon.**

From Turkestan. Collected and presented by Mr. Philip M. Lydig, New York City. Received June 4, 1917.

"These melons are delicious six months after being taken from the vine." (*Lydig*.)

44816. CAESALPINIA MELANOCARPA Griseb. Cæsalpiniaceæ.

From Paraguay. Presented by Mr. C. F. Mead, Asuncion, Paraguay. Received June 4, 1917.

"*Guayacan*. From Chaco Paraguayo, near Asuncion, Paraguay. A very handsome and useful timber tree, though for the most part useless in Chaco through being unsound. In many respects it corresponds to teak. The bark has medicinal properties. It may do well in the southern United States." (*Mead*.)

44817. VOANDZEIA SUBTERRANEA (L.) Thouars. Fabaceæ.

From Umkomaas, Natal, Union of South Africa. Presented by Rev. H. D. Goodenough. Received June 5, 1917.

"*Woandzu*. The natives plant these when the first rains come, on new ground, preferably a sandy loam. They look very much like peanuts, but in cooking they are boiled in their shells." (*Goodenough*.)

A yellow-flowered annual with upright, long-stalked compound leaves composed of three leaflets. Like the common peanut, the flower stalks bend down to the earth after flowering, and the pods are ripened underneath the ground. In the requisite cultural conditions the plant much resembles the common peanut. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 232.)

44818 to 44822.

From Guatemala. Collected by Mr. Wilson Popenoe, agricultural explorer. Received May 4, 1917. Quoted notes by Mr. Popenoe.

44818. CLEOME sp. Capparidaceæ.

"(No. 104a. From Purula, Department of Baja Vera Paz.) Seeds of *alcochofi*, an herbaceous plant found in the mountains at an altitude of about 6,000 feet. It sends up slender stems to a height of about 6 feet, producing large numbers of delicate pale blue and white flowers. The leaves and stems, when crushed, have a pungent odor."

44819. DAHLIA EXCELSA Benth. Asteraceæ.**Dahlia.**

"(No. 105. From Purula, Department of Baja Vera Paz.) Cuttings of a double pink variety of the common tree dahlia. It is pale lilac, the same color as the typical form, but unlike the latter, which has large single flowers, this variety has double flowers resembling in form some of the common garden dahlias of the North. The plant grows to a height of 15 feet, or even more, and blooms during a long period. It is cultivated in the gardens of the Indians, but is not common. In the Pokom dialect it is called *shikhor*; in Kekchi *tzoloh*."

44820. PERSEA AMERICANA Mill. Lauraceæ.**Avocado.**

(*P. gratissima* Gaertn. f.)

"(No. 87a. Seeds of avocado No. 15 [S. P. I. No. 44439] from the finca Santa Lucia, Antigua.) These seeds are to be grown and distributed as choice seedlings to those who wish to plant a seedling tree on the possibility that it may become a valuable new variety. It will be interesting to watch these trees when they come into fruit and to compare their fruits with those of their parent, avocado No. 15. The latter is a very choice variety."

44821. MAXIMILIANEA VITIFOLIA (Willd.) Krug and Urb. Cochlosper-

(*Cochlospermum hibiscoides* Kunth.)

[maceæ,

"(No. 107a.) *Tecomasuche*. Seeds of a common shrub or small tree of eastern and central Guatemala, from the highlands at about 4,000 feet down to a level of 1,000 feet or perhaps lower. The plant occasionally reaches a height of 35 feet, is always stiff, rather sparsely branched, and bears stout branchlets, which usually carry leaves only toward their tips. The plant is leafless from December or January to May in most sections; at this period it produces at the ends of the branchlets numerous large yellow flowers, single, brilliant in color, with a deep-orange center. They are followed by oval seed pods as large as a hen's egg."

44818 to 44822—Continued.**44822.** MAURANDIA SCANDENS (Cav.) Pers. Scrophulariaceæ.

"(No. 108a. From Purula, Department of Baja Vera Paz.) Seeds of a slender creeper from a garden. It has delicate foliage and funnel-shaped flowers about an inch broad and lavender in color. Since it is found at an altitude of over 5,000 feet, it should be sufficiently hardy to grow in southern California as well as in Florida."

44823. PIMENTA ACRIS (Swartz) Kosteletsky. Myrtaceæ.**Bay tree.**

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received June 4, 1917.

A small, erect tree, the leaves of which are very aromatic, yielding by distillation an oil which is used in the preparation of bay rum. It is a native of the West Indies, but is cultivated in other tropical places also. The dried leaves and the bay rum form an important export from St. Thomas and other West Indian Islands. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 261.)

44824. PIMENTA OFFICINALIS Lindl. Myrtaceæ.**Allspice.**

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received June 5, 1917.

A small tree with smooth, grayish bark, native to Central America and the West Indies, but cultivated in many places throughout the Tropics for the berries. These when ripe are glossy black and the size of small peas, but when dried before ripening are the allspice or pimento of commerce. It is considered to yield best in a hot and rather dry climate and prefers a loose loam or an alluvial, well-drained soil. At the present time Jamaica is the only place from which allspice is exported. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 259.)

44825. ERYTHROCHITON sp. Rutaceæ.

From Para, Brazil. Presented by Mr. J. Simão da Costa. Received June 5, 1917.

"A rutaceous plant which may be called a botanical curiosity, from the queer way in which its flowers are borne. It prefers a warm, moist atmosphere and not too much light." (*Da Costa*.)

The flowers of *Erythrochiton hypophyllanthus*, a related species, are borne on the midribs of the leaves.

Received as *Erythrochiton paraensis*, for which no place of publication has yet been found.

44826 to 44828. HOLCUS SORGHUM L. Poaceæ.**Sorghum.**(*Sorghum vulgare* Pers.)

From Salisbury, Rhodesia, Africa. Presented by Mr. J. O. S. Walters, assistant agriculturist, Department of Agriculture. Received June 5, 1917. Quoted notes by Mr. Walters.

Introduced for the Office of Forage-Crop Investigations.

44826. "The cultivated variety."**44827.** "The wild variety."**44828.** "Probably a cross. All of these native sorghums cross readily."

44829. BRASSICA OLERACEA VIRIDIS L. Brassicaceæ.

From Jersey Island, Channel Islands, Great Britain. Presented by Mr. D. R. Bisson, St. John. Received June 6, 1917.

"*Jersey tree kale* or *cow cabbage*. In this section Jersey kale is sown at the end of summer, then transplanted to 2 or 3 feet apart about November. It must be protected to stand continued severe frost. Its stalk attains a height of 8 to 12 feet. The leaves of the growing plant are used for feeding cattle and pigs." (*Bisson.*)

44830. ZEA MAYS L. Poaceæ.**Corn.**

From Johannesburg, Union of South Africa. Purchased from the Agricultural Supply Association, for the use of the Office of Cereal Investigations. Received May 9, 1917.

"*Izotsha* maize is a strain (apparently of *Boone County White*) which is successfully grown in a limited area on the south coast of Natal, bordering Pondoland, an area which is subject to great extremes of drought and heat during the summer. It is claimed by farmers in that locality that it is the only breed of maize which has been found satisfactory in that particular vicinity, but as they are isolated from the main maize belt of South Africa it is quite possible they have not tried some of the more drought-resistant types which are now being grown in other parts of the Union. (*Letter of J. Burt Davy, dated August 18, 1917.*)

44831 to 44838.

From Sydney, Australia. Presented by Mr. J. H. Maiden, director, Botanic Gardens. Received June 8, 1917.

44831. CHORIZEMA CORDATUM Lindl. Fabaceæ.

A tall, slender, glabrous, evergreen shrub, 7 to 10 feet high, with weak branches, more or less prickly leaves about 2 inches in length, and numerous red flowers. It is propagated from cuttings and may be grown in the open in southern California and southern Florida, being excellent for training on pillars and trellises. In colder regions it is an attractive plant for the cool greenhouse. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 752.*)

44832. CYTISUS STENOPETALUS (Webb) Christ. Fabaceæ.**Gacia.**

A shrub or small tree, up to 20 feet in height, with crowded, slender-stemmed trifoliate leaves, silky pubescent on both sides, or sometimes smooth on the upper surface. The bright yellow, slightly fragrant flowers occur in short terminal racemes, and the flat dehiscent pod contains from five to seven seeds. It is a native of the Madeira Islands, and is cultivated there and in Australia as an ornamental. In the Canary Islands it is said to be used as fodder. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 949*, and from *Report of the Director of the Botanic Gardens, Sydney, Australia, 1916, p. 5.*)

44833. EUGENIA CYANOCARPA F. Muell. Myrtaceæ.

Although the fruits of this species are inferior to those of the *Eugenias* ordinarily cultivated (*Eugenia uniflora* and *E. dombeyi*), yet they may have some economic importance in the future. (Adapted from *Maiden, Report of the Sydney Botanic Gardens, 1915.*)

44831 to 44838—Continued.**44834. ISOTOMA AXILLARIS** Lindl. Campanulaceæ.

An erect perennial plant, 6 to 12 inches high, which flowers the first year, appearing to be annual, but forming at length a hard rootstock. It has a few spreading branches, irregularly pinnatifid linear leaves 2 to 3 inches long, and large, bluish purple axillary flowers. It is a native of Australia, where it is now cultivated as an ornamental. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1707.*)

44835. PERSOONIA MYRTILLOIDES Sieber. Proteaceæ.

A much-branched spreading shrub about 4 feet high, with rigid, oblong-lanceolate leaves about an inch in length and axillary flowers nearly half an inch long. It is a native of the Blue Mountains in New South Wales. (Adapted from *Bentham and Mueller, Flora Australiensis, vol. 5, p. 401.*)

44836. PETROPHILA PULCHELLA (Schrud.) R. Br. Proteaceæ.

An erect, shrubby plant, with alternate, much-divided threadlike leaves and a conical head of small white flowers. It is a native of Australia, where it is sometimes cultivated as an ornamental. (Adapted from *Curtis's Botanical Magazine, vol. 21, pl. 796, as Protea pulchella.*)

44837. TELOPEA SPECIOSISSIMA (J. E. Smith) R. Br. Proteaceæ.

Waratah.

A stout, erect, glabrous shrub 6 to 8 feet high, with leathery, cuneate-oblong leaves 5 to 10 inches long and very handsome crimson flowers in dense heads or racemes 3 inches in diameter. The fruit is a leathery, recurved follicle 3 to 4 inches long, containing 10 to 20 seeds. It is native to New South Wales. (Adapted from *Bentham and Mueller, Flora Australiensis, vol. 5, p. 534.*)

44838. VITTADINIA TRILOBA (Gaud.) DC. Asteraceæ.

(V. australis A. Rich.)

An herbaceous plant, either erect and apparently annual or with diffusely ascending stem from a perennial woody base, usually not more than a foot high. The leaves are entire or coarsely three lobed, and the purplish flower heads are solitary and terminal. It is a native of southern Australia and might be useful as an ornamental in borders. (Adapted from *Bailey, Queensland Flora, pt. 3, p. 811.*)

44839. CACARA EROSA (L.) Kuntze. Fabaceæ.**Yam bean.**

(Pachyrhizus angulatus Rich.)

From Mayaguez, Porto Rico. Presented by Mr. C. F. Kinman, horticulturist, Agricultural Experiment Station. Received June 8, 1917.

"Habilla." A shrubby, twining, tuberous-rooted vine with trifoliolate leaves, reddish flowers in racemes up to a foot in length, and straight pods 6 to 9 inches long, containing 8 to 12 seeds. It is cultivated throughout the Tropics for the sake of the edible roots, which are prepared and eaten like potatoes or subjected to a process for extracting the starch. This starch is pure white and is said to be equal in every respect to that obtained from arrowroot. It is very palatable and is used in making custards and puddings. The powdered tubers make a very excellent flour. Although the ripe beans are poisonous, the pods are not and when young are eaten like string beans. In Florida and in the island of Mauritius this bean is used as a cover crop.

For an illustration of the yam bean as a cover crop, see Plate VIII.

44840. SISYRINCHIUM sp. Iridaceæ.

From Guatemala. Plant collected by Mr. Wilson Popenoe, agricultural explorer. Received June 8, 1917.

“(No. 135. May 28, 1917.) A flowering plant from the hillsides near Momostenango, in the Department of Totonicapam, at an altitude of 7,500 feet. It grows to a height of about 2 feet, with slender, grasslike leaves. In May it produces flower stalks up to about 2½ feet high, each bearing several pale-blue flowers about an inch in diameter, with six lanceolate petals. It is called in Spanish *Flor de Mayo* (*Mayflower*). This should be adapted to cultivation in California and Florida. It seems to like a heavy soil.” (*Popenoe*.)

44841. ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

From Oran, Salta, Argentina. Presented by Mr. S. W. Damon. Received June 9, 1917.

“Seeds of *Annona cherimola* from rather good fruit which I ate a few days ago. The trees which bore the fruit withstood, last winter, a temperature of about 15° F.” (*Damon*.)

44842. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. Watermelon.

From Durban, Natal, Union of South Africa. Presented by Mr. William W. Masterson, American consul. Received June 8, 1917.

Mankataan. A melon much cultivated throughout Natal for use as cattle feed. It is exceptionally tough, enduring rough handling and keeping for six months after ripening without spoiling; but, at the same time, it is very watery and makes an excellent green fodder for live stock, especially when mixed with such feed as alfalfa hay or cornstalks. It is also very suitable for jam making, some of the Cape Colony firms using large quantities for this purpose. One pound of seed will plant 2 or 3 acres, and as much as 120 tons of melons has been taken from a single acre. It might be suitable for the semiarid regions of the United States. (Adapted from *William W. Masterson, consular report, April 18, 1917*.)

44843. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ. Job's-tears.

From Chosen (Korea). Presented by Miss Katherine Wambold, Yunmotkol, Keijo, through Mrs. M. W. Spaulding, Washington, D. C. Received June 1, 1917.

“*Yulé moo*. Grows in ordinary fields. Made into meal by mixing with water, then draining, drying, and pounding. When mixed with water and salt it is made into a kind of bread.” (*Wambold*.)

This variety might be called the cultivated edible Job's-tears, and it includes many forms, all of which are characterized by having a thin, loose, easily broken shell. They are often longitudinally striated and in many examples are constricted at the base into what has been called an annulus. In the central provinces of India, among the aboriginal tribes, this grain forms an important article of food. It has been introduced into Japan, where the seeds are pounded in a mortar and eaten as meal. (Adapted from the *Agricultural Ledger, No. 13, p. 217, 1904*.)

44844. CARPINUS ORIENTALIS Mill. Betulaceæ.**Oriental hornbean.**

From Petrograd, Russia. Presented by Dr. A. Fischer de Waldheim, director, Jardin Botanique de Pierre le Grand. Received June 5, 1917.

A small tree or large shrub, up to 20 feet high, having ovate, dark glossy-green leaves, 1 to 2 inches long, with doubly dentate margins. The staminate catkins are up to three-quarters of an inch in length, and the exposed nuts are about one-sixteenth of an inch long. It is a native of southeastern Europe and Asia Minor and is cultivated in European gardens merely as an interesting rarity. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 296.)

44845. RUBUS LINEATUS Reinw. Rosaceæ.

From Lawang, Java. Presented by Mr. M. Buysman. Received June 9, 1917.

A stout, semierect herb with softly pubescent branches, straight prickles or none at all, and compound leaves composed of three to five leathery, often doubly serrate leaflets up to 5 inches in length and $2\frac{1}{2}$ inches in width. The flowers occur either in short axillary heads or in elongated terminal panicles, and the berries are red. It is a native of the Sikkim Himalayas, where it is found at altitudes ranging from 6,000 to 9,000 feet. It is very variable in the size of the flowers and the width of the leaflets. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 333.)

44846 to 44854.

From Avondale, Auckland, New Zealand. Presented by Mr. H. R. Wright. Received June 9, 1917.

44846. CYPHOMANDRA BETACEA (Cav.) Sendt. Solanaceæ. Tree-tomato.

An evergreen, semiwoody plant, native to Peru. Cultivated throughout the Tropics for the edible, ovoid, smooth-skinned fruits which are produced in hanging clusters at the ends of the branches. When mature these fruits are reddish yellow, with a subacid pulp of an agreeable flavor; although pleasant when eaten fresh, they are used chiefly for stewing or for jam or preserves. The tree is a quick grower, commencing to bear when about 2 years old, and thrives best on deep soil. Propagation is by seeds. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, ed. 2, p. 194.)

44847. DOVYALIS CAFFRA (Hook. and Harv.) Warb. Flacourtiaceæ.

(*Aberia caffra* Hook. and Harv.)

Umkolo.

"Fruits used for jams and jellies; the plant is grown for hedges. It is very prickly and is hardy in New Zealand." (*Wright*.)

A shrub or small tree, with pale-green leaves $1\frac{1}{2}$ inches long and up to an inch in width. The edible fruit resembles a small yellowish apple and is so exceedingly acid when fresh that it is said to be used without vinegar as a pickle. It is a native of tropical Africa, but has been introduced into southern California and southern Florida. (Adapted from *The Pacific Garden*, August, 1914.)

44848 and 44849. LEPTOSPERMUM SCOPARIUM Forst. Myrtaceæ.

Manuka.

"Very hardy. Used for firewood, as it gives great heat. Very pretty when in flower. Grows 6 to 10 feet high." (*Wright*.)

One of the most abundant of New Zealand shrubs, reaching occasionally a height of 30 feet, with hard, leathery, sharp-pointed leaves and

44846 to 44854—Continued.

white or pinkish, odorless flowers up to three-quarters of an inch in width. This plant flowers so profusely that the entire country appears as though covered with snow. The entire plant is very aromatic, and the leaves have been used for making tea. The wood is used for fences and firewood. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 272.)

44848. (No. 1.)**44849.** (No. 2.)**44850.** *NAGEIA EXCELSA* (D. Don.) Kuntze. Taxaceæ.(*Podocarpus dacrydioides* A. Rich.)

"This is the one tree exclusively used in this country for making butter boxes, the wood being odorless and of a nice white color. The tree grows very tall and often has a trunk 5 or 6 feet in diameter." (Wright.)

A tall tree, often branchless for 70 or 80 feet, with flat, bronze-colored young leaves, which become green and scalelike when mature. The very small catkins are borne on the tips of the branchlets, and the fruit is set upon a fleshy red receptacle which is eaten by the Maoris. The tree is native to New Zealand, where it is called by the Maori name *Kahikatea*. It furnishes a light-colored, very heavy timber which is well suited for making paper pulp. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 70, as *Podocarpus dacrydioides*.)

44851. *NAGEIA FERRUGINEA* (G. Benn.) Kuntze. Taxaceæ.**Miro.**(*Podocarpus ferruginea* G. Benn.)

A large tree with gray or grayish black bark which peels off in large flakes; native to New Zealand. It has narrow, pointed leaves, axillary diœcious flowers, and bright-red fruits about the size of a small plum. The native pigeons are very fond of the *miro* berries and become very fat and lazy from feeding on them. The fruits have the odor and taste of turpentine and ripen in July and August. The timber is hard and rough and is not easily worked, nor is it especially durable. The gum which oozes from the tree possesses healing properties. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 68, as *Podocarpus ferruginea*.)

44852. *PASSIFLORA* sp. Passifloraceæ.**Granadilla.**

"*Bell-apple* or *Indian passion fruit*. A delicious fruit requiring tropical heat." (Wright.)

44853 and 44854. *PASSIFLORA EDULIS* Sims. Passifloraceæ.**Purple granadilla.****44853.** "*Fiji*."

44854. "*Giant*. An improved strain of the common passion fruit as grown in New Zealand and Australia. Largely grown commercially. Will grow wherever frosts are not too heavy in winter." (Wright.)

44855. *ACHRAS ZAPOTA* L. Sapotaceæ.**Sapodilla.**(*A. sapota* L.)

From Curaçao, Dutch West Indies. Presented by Mr. H. M. Curran. Received June 11, 1917.

"*Nispero*. From very large, choice fruits." (Curran.)

44856. PERSEA AMERICANA Mill. Lauraceæ.**Avocado.***(P. gratissima Gaertn. f.)*

From Guatemala. Budwood collected by Mr. Wilson Popenoe, agricultural explorer. Received June 12, 1917.

"(Nos. 146, 193, 221. Avocado No. 30.) *Tertoh*. A famous variety from Mixco, near the city of Guatemala, noted for its large size and excellent quality.

"The parent tree is growing in the sitio of Leandro Castillo, just above the plaza of Mixco, at an altitude of approximately 5,700 feet. The tree is said by the owner to have been grown by his grandfather from a seed brought from Moran, a small village about 10 miles distant. While its age is not definitely known, it is estimated at about 60 years. It is about 25 feet high, broad and spreading in habit, with a trunk 15 inches thick at the base, branching 7 feet from the ground to form a dense crown fully 30 feet broad. A peculiarity of the tree is its very brittle wood. This may be against the variety in California and Florida, where strong winds occasionally do much damage. The growth seems to be vigorous, and the budwood is very satisfactory, the twigs being stout, well formed, and supplied with vigorous buds.

"The climate of Mixco is cool, but not cold enough to test the hardiness of the variety. This can only be determined by a trial in the United States.

"The tree flowers in March. According to the owner, it has not borne as well in recent years as formerly. He attributes this to the fact that the tree is getting old, but it seems in addition to have been weakened by the attacks of insects. No fruits were produced from the 1916 blooms. The 1917 blooms resulted in a good crop, but many of the fruits dropped to the ground when nearly full grown. Upon examination they appeared to have been attacked by some insect, whose burrows could be seen toward the base of the fruit. The season of ripening is said to be from February to April, the fruits being at their best in March. They can, however, be picked as early as January. Toward the end of the season they become very rich in flavor.

"The fruit is long and slender, tending toward pyriform. It weighs as much as 3 pounds in some instances. It is deep purple in color when fully ripe and has a rather thin skin (for this race) and deep cream-colored flesh of very rich flavor. The seed is very small in comparison to the size of the fruit.

"An American relates that he once brought a fruit from the tree to his home in the city of Guatemala, where it sufficed to make salads for two meals for a household of 10 people.

"The variety may be formally described as follows: Form oblong to slender pyriform; size extremely large, weight 28 to 36 ounces, and occasionally up to 48 ounces, length 7 to 8½ inches, greatest breadth 3¾ to 4¼ inches; base broad to narrow, sometimes pointed, the slender stem about 5 inches long inserted slightly obliquely without depression; apex rounded; surface nearly smooth, deep dull purple in color with numerous russet dots and patches; skin moderately thick, about one-sixteenth of an inch or slightly more, coarse, granular and woody; flesh cream yellow in color, free from fiber or discoloration and of fine texture; flavor rich and pleasant; quality excellent; seed very small, slender conical in form, about 1½ ounces in weight, tight in the seed cavity, with both seed coats adhering closely to the cotyledons." (*Popenoe*.)

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 135, fig. 32; reprint, 1918, p. 26, fig. 32; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 64, pl. 22.

For an illustration of the parent tree of the *Tertoh* avocado, see Plate IX.



THE PARENT TREE OF THE TERTOHO AVOCADO.

(*Persea americana* Mill., S. P. I. No. 44857.)

The Tertofo is one of the largest varieties of Guatemalan avocados discovered by Mr. Wilson Popenoe during his 16 months' exploration of Guatemala. The fruits (two of which are held by Mr. Castillo) are large, sometimes weighing 3 pounds; the seed is comparatively small, and the flesh is a rich yellow color and of a nutty flavor. It is hoped that this variety will prove to be a good bearer in this country. (Photographed by Mr. Popenoe, in the grounds of Mr. Leandro Castillo, México, Guatemala, December 4, 1917; P17470FS.)



THE GUAYACAN, OR "LIGNUM-VITÆ," AN ORNAMENTAL TREE FROM GUATEMALA.

Guayacum guatemalense Planch., S. P. I. No. 41828.)

In Guatemala, according to Mr. Wilson Popehoe, this species forms a shrub, or sometimes a small tree, with evergreen foliage and attractive lavender-purple flowers, which are so showy as to make the plant conspicuous from a distance. It furnishes the extremely hard wood of commerce and appears to be hardy in southern Florida. It is quite distinct from the native Florida species, *G. sanctum*, which also deserves to be cultivated as an ornamental. The specimen shown here is only 3 years old. (Photographed by David Fairchild, at Buena Vista, Fla., March 28, 1919; P2534FS.)

44857. NEPHROLEPIS sp. Polypodiaceæ.**Fern.**

From Guatemala. Plants collected by Mr. Wilson Popenoe, agricultural explorer. Received June 25, 1917.

"(No. 147. June 9, 1917.) Ferns collected in the forest at Quirigua, where they were found growing in the leaf axils of the corozo palm (*Attalea cohune* Mart.)." (*Popenoe.*)

Introduced for the monographic study of Mr. R. C. Benedict, of the Brooklyn Botanic Garden.

44858. GUAIAECUM GUATEMALENSE Planch. Zygophyllaceæ.**Guayacan.**

From Guatemala. Collected by Dr. F. S. Johnson and sent through Mr. Wilson Popenoe, agricultural explorer. Received June 25, 1917.

"(No. 145a. From Zacapa, June 5, 1917.) The *guayacan*, sometimes called by Americans *lignum-vitæ*, is found in abundance upon the plains of the lower Motagua Valley, in the vicinity of El Rancho, Zacapa, and other towns. It is a small tree, sometimes attaining 30 feet in height, usually somewhat spreading in habit, with a trunk sometimes gnarled and twisted and having slender branches. The leaves are small and delicate. Toward the end of the dry season, i. e., in February or March, the tree comes into flower, and it is then a mass of lavender purple, distinguishable for long distances across the plains. It remains in bloom for several weeks.

"The wood is exceedingly hard and, though difficult to work, is of value for cabinet purposes. The heartwood is rich brown in color, while the sapwood which surrounds it is light yellow. Both take a fine polish.

"The tree thrives in a warm climate with little rainfall. The soil upon which it grows is often rocky and poor. Whether it will stand any frost can not be stated, but it seems likely that it may succeed in parts of California and Arizona and perhaps also in Florida. Small trees often flower profusely. It should be given a trial as an ornamental in the regions mentioned." (*Popenoe.*)

For an illustration of the guayacan as grown in Florida, see Plate X.

44859 to 44864.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received June 11, 1917.

44859. ALANGIUM CHINENSE (Lour.) Rehder. Cornaceæ.
(*Marlea begoniaefolia* Roxb.)

"A tree, hardy here, but it loses its leaves in winter; this might not happen in a warmer climate." (*Proschowsky.*)

A tall tree, up to 60 feet in height, with ovate, entire or slightly lobed leaves about 8 inches in length, and cymes of small, whitish, fragrant flowers. It is a native of Africa and southern and eastern Asia. This tree might be grown in the extreme southern United States. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 1, p. 243, as *Alangium begoniaefolium*.)

44860. BOEHMERIA MACROPHYLLA D. Don. Urticaceæ.

A pretty shrub with narrow dentate leaves 6 to 12 inches in length and very long, drooping flower spikes. It is a native of Upper Burma and northeastern India, where it ascends to 4,000 feet. The wood is light reddish brown and moderately hard and yields a good fiber, which is used for ropes and fishing lines. (Adapted from *J. S. Gamble, Manual of Indian Timbers*, p. 658.)

44859 to 44864—Continued.**44861. BOEHMERIA PLATYPHYLLA** D. Don. Urticaceæ.

A very common shrub, growing in ravines in the tropical and subtropical Himalayas. It has thin grayish brown bark, very variable leaves 3 to 9 inches long, and simple or branched spikes of small globular flower clusters. The wood is reddish brown and moderately hard. (Adapted from *J. S. Gamble, Manual of Indian Timbers*, p. 658.)

44862. MEIBOMIA TILIAEFOLIA (Don) Kuntze. Fabaceæ.*(Desmodium tiliaefolium* Don.)

"Hardy and more or less ornamental." (*Proschowsky*.)

A large deciduous shrub, with slender, terete branches, thick, green, trifoliate leaves about 4 inches long, and red flowers in lax racemes often a foot in length. It is a native of the Himalayas, at altitudes ranging from 3,000 to 9,000 feet. The bark yields an excellent fiber, extensively employed in rope making; the leaves are good fodder, and the roots are used medicinally as a tonic and diuretic. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 168, and from *Watt, Dictionary of the Economic Products of India*, vol. 3, p. 83.)

44863. PIPTANTHUS NEPALENSIS (Hook.) Sweet. Fabaceæ.

A pretty shrub, with greenish gray bark and handsome, large, yellow flowers in rather dense racemes. The wood is white, with irregular gray heartwood. It is a native of the Himalayas at altitudes above 7,000 feet and is sometimes grown as an ornamental in European gardens. (Adapted from *J. S. Gamble, Manual of Indian Timbers*, p. 229.)

44864. TRACHYCARPUS MARTIANUS (Wall.) Wendl. Phœnicaceæ. **Palm.**

"Quite hardy and ornamental here." (*Proschowsky*.)

A tall palm, with a slender trunk 20 to 50 feet high, naked for most of its length, being clothed beneath the crown with persistent leaf sheaths. The rigid, leathery, roundish leaves are 4 to 5 feet in diameter and are cut about halfway down into linear 2-lobed segments. The flowers are yellow, and the one to three dull blue drupes are half an inch long. It is a native of the temperate parts of the Himalayas, at altitudes of 4,000 to 8,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 6, p. 436.)

44865 to 44884.

From tropical America. Presented by Mr. H. M. Curran. Received June 6, 1917.

44865. ACACIA VILLOSA (Swartz) Willd. Mimosaceæ.

"(Curaçao, Dutch West Indies, March 9, 1917.) *Watapaana sjimaron*. A shrub or tree of rapid growth; used for firewood." (*Curran*.)

See S. P. I. No. 44452 for description.

44866. ACHRAS ZAPOTA L. Sapotaceæ.**Sapodilla.***(A. zapota* L.)

"(Curaçao, Dutch West Indies, March, 1917.) Seeds from the best and largest *nispero* I have ever eaten." (*Curran*.)

44867. CAPPARIS sp. Capparidaceæ.

"(Urumaco, Venezuela, May, 1917.) A tree with large oval dark-green leaves. Fruits reported to be edible." (*Curran*.)

44865 to 44884—Continued.

44868. *CARICA PAPAYA* L. Papayaceæ. Papaya.

"(Curaçao, Dutch West Indies, March, 1917.) Seeds of a medium-quality papaya sold in the market here." (Curran.)

44869. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ. Watermelon.

"(Curaçao, Dutch West Indies, March, 1917.) The watermelons of Curaçao are the best I have tasted in the Tropics." (Curran.)

44870. *CUCUMIS MELO* L. Cucurbitaceæ. Muskmelon.

"(Curaçao, Dutch West Indies, March 9, 1917.) Muskmelon from the Curaçao market; of fair quality." (Curran.)

44871 to 44874. *Gossypium* sp. Malvaceæ. Cotton.

44871. "(Altagracia, Venezuela, May, 1917.) *Algodon de Peru*. Grown as a commercial crop which sells at the rate of \$20 for 500 pounds." (Curran.)

44872. "(Altagracia, Venezuela, May, 1917.) *Algodon moreno*. Commercial cotton, grown and manufactured in the same region." (Curran.)

44873. "(Los Quemazons, Venezuela, May, 1917.) *Algodon de Peru*. Commercial crop." (Curran.)

44874. "(Los Quemazons, Venezuela, May, 1917.) *Algodon moreno*. Commercial crop (?)." (Curran.)

44875. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

"(Market, Willemstad, Curaçao, Dutch West Indies, March, 1917.) *Mais chiquito*. Used for making meal." (Curran.)

44876. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.

"(Market, Willemstad, Curaçao, Dutch West Indies, March, 1917.) *Klein boontje*." (Curran.)

"Small forms of the large flat Lima bean. The shape, color, and markings are like types in this country. They may be either the bush or the pole form." (D. N. Shoemaker.)

44877. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

"(Market, Willemstad, Curaçao, Dutch West Indies, March, 1917.) *Klein boontje*." (Curran.)

"Probably the variety known as *Dutch Caseknife*." (D. N. Shoemaker.)

44878. *RUPRECHTIA FAGIFOLIA* Meisn. Polygonaceæ. Duraznillo.

"(La Estacadita, near Sabanita de Coro, Venezuela, May, 1917.) *Komari*. A small tree." (Curran.)

A South American tree with smooth bark which, in renewing itself each year, wrinkles in a peculiar way, giving the tree a characteristic appearance. In the spring it is covered with yellowish flowers which later become pinkish, making the tree very ornamental. The wood is of no commercial use, so far as is known. (Adapted from *Venturi and Lillo, Contribucion al Conocimiento de los Arboles de la Argentina*, p. 83.)

44879. *SESAMUM ORIENTALE* L. Pedaliaceæ. Sesame.
(*S. indicum* L.)

"(Willemstad, Curaçao, Dutch West Indies, March 9, 1917.) *Ajonjoli*. Sold in the market; for making sweetmeats." (Curran.)

See S. P. I. No. 44763 for description.

44865 to 44884—Continued.

44880 to 44882. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. **Cowpea.**

"(Market, Willemstad, Curaçao, Dutch West Indies, March, 1917.)
Boontje del Baliza." (Curran.)

Descriptive notes by Mr. W. J. Morse, Office of Forage-Crop Investigations, Bureau of Plant Industry.

44880. "No. 1. A red cowpea, quite similar to our *Red Ripper*."

44881. "No. 2. A clay-colored cowpea, resembling some of our medium-maturing Clay varieties."

44882. "No. 3. A speckled cowpea, resembling our *Whippoorwill* variety."

44883. *MELICocca BIJUGA* L. Sapindaceæ.

"(Sabanete de Montiel, Venezuela, May, 1917.)" (Curran.)

44884. *MIMOSA* sp. Mimosaceæ.

"(La Estacadita, near Sabanita de Coro, Venezuela, May, 1917.)
Cabuderõ. A common, small, leguminous tree with white flowers."
(Curran.)

44885. PRUNUS SALICIFOLIA H. B. K. Amygdalaceæ. **Capuli.**

From the city of Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, agricultural explorer. Received June 12, 1917. Quoted notes by Mr. Popenoe.

"(No. 128a. May 16, 1917.) The wild cherry of the Guatemalan highlands, called *cereza* in Spanish and *capuli* in the Kiché Indian dialect. The tree is found both wild and cultivated in the mountains of Guatemala, from altitudes of about 4,000 up to 9,000 feet or perhaps higher. As commonly seen, the tree is erect, often somewhat slender, reaching a height of about 30 feet, the trunk stout (occasionally as much as 3 feet thick), and the bark rough and grayish. The young branchlets are dotted with grayish lenticels. The leaves, which are borne upon slender petioles three-quarters of an inch long, are commonly $4\frac{1}{2}$ inches in length, $1\frac{1}{4}$ to $1\frac{1}{2}$ inches in breadth at the widest point, oblong-lanceolate in outline, with a long, slender tip. The upper surface is dull green, the lower surface glaucous, and the margin is rather finely serrate. The flowers, which are produced from January to May, are white, about three-eighths of an inch wide, and very numerous, on slender racemes 2 to 4 inches in length.

As many as 15 or 20 fruits sometimes develop on a single raceme, but many drop off before reaching maturity, with the result that two to five ripe fruits are commonly found on each raceme. The season of ripening in Guatemala is from May to September. The ripe fruits, which are slightly oblate in form and up to three-quarters of an inch in diameter, separate readily from the short fruit stalks, leaving the green 5-toothed calyxes adhering to the latter. In color the fruit is deep glossy maroon-purple. The skin is thin and tender, but so firm that the fruit is not easily injured by handling. The flesh is pale green, meaty, but full of juice. The flavor is sweet, suggestive of the Bigarreau type of cherry, with a trace of bitterness in the skin. The stone is a trifle large in comparison with the size of the fruit.

"Pleasant to eat out of hand, this cherry can also be eaten in various other ways—stewed or made into preserves or jams. In Guatemala it is most commonly eaten out of hand and as a sweet preserve.

"This species does not appear to be adapted to hot tropical seacoasts, but it seems to be distinctly subtropical in character. It may succeed in moist subtropical regions, such as Florida, where other types of cherries do not thrive."

44886 and 44887. MARTYNIA spp. Martyniaceæ.

From La Mortola, Ventimiglia, Italy. Presented by Mr. Joseph Benbow, superintendent, La Mortola gardens. Received June 13, 1917.

Introduced for the plant-breeding experiments of Prof. David M. Mottier, Bloomington, Ind.

44886. MARTYNIA LOUISIANA Mill.

Unicorn plant.

(*M. proboscidea* Glox.)

An ascending or prostrate annual, with branches 2 to 3 feet in length and large roundish leaves 4 to 12 inches wide. The dull white or yellowish flowers are $1\frac{1}{2}$ to 2 inches long, occurring in short, loose, terminal racemes, and the fruit is a more or less fleshy capsule 4 to 6 inches long at maturity, with a beak equaling or exceeding the body. It is a native of the United States, excepting in the North and East. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2005.)

44887. MARTYNIA LUTEA Lindl.

A pale annual, with roundish, heart-shaped leaves and large greenish yellow flowers with orange interiors, occurring in erect, few-flowered racemes. The fruit is a woody, boat-shaped capsule with two beaks 2 inches in length. It is a native of Brazil and has been cultivated in European greenhouses for the sake of the showy flowers. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2005.)

44888. MELIA FLORIBUNDA Carr. Meliaceæ.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received June 13, 1917.

This species is considered by some to be a very floriferous and precocious form of the China tree (*Melia azedarach*), but the plant grown in the United States under this name is a bushy species 8 or 10 feet high, with pinnate leaves composed of lanceolate or oblong-lanceolate, taper-pointed leaflets. It is said to begin to bloom when 1 or 2 feet high and is an ornamental adapted to the southern United States. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2025.)

44889. CARICA PAPAYA L. Papayaceæ.

Papaya.

From Santa Barbara, Isle of Pines, West Indies. Presented by Mr. R. G. Rice. Received June 14, 1917.

"Very fine quality; the fruits weigh from 4 to $7\frac{3}{4}$ pounds each." (*Rice*.)

44890 and 44891.

From Bogota, Colombia. Presented by Mr. George E. Child. Received June 14, 1917.

44890. ACHRAS ZAPOTA L. Sapotaceæ.

Sapodilla.

(*A. zapota* L.)

A small, symmetrical tree, 25 to 30 feet high, with leathery, dark-green, shiny leaves and round or oblong fleshy fruits, resembling in outward appearance a smooth-skinned brown potato. It is a native of tropical Amer-

44890 and 44891—Continued.

ica, although cultivated in the Asiatic Tropics as well. When thoroughly ripe, the fruit is very fine for eating, a very thin skin inclosing a pale-brown, juicy pulp of delicious flavor. It is best propagated by cuttings, although it may be raised from seeds. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 133.)

44891. CARYOPHYLLUS JAMBOS (L.) Stokes. Myrtaceæ. **Rose-apple.**
(*Eugenia jambos* L.)

A handsome medium-sized tree, native to India and the Malay Peninsula, but cultivated in many tropical countries for the edible, fragrant, pinkish fruits, which are about the size of a hen's egg, of a sweetish acid taste, and said to be sometimes used in preserves. It thrives best in moist regions at altitudes up to 3,000 feet, preferring a deep, rich soil, and is propagated by seed. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 161.)

44892. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ.**Pai ts'ai.**

From Ann Arbor, Mich. Purchased from Mrs. Fred Osborn, manager, Varsity City Celery Co. Received June 15, 1917.

"*Lun Gar Bak.* Of the dozens of strains of Chinese cabbage, the short-leaved, solid-headed strain is the one that we have always used and found most profitable.

"As a field crop sow in rows 3 feet apart and thin to 18 inches in the row. Keep the plants well watered and cultivated, for as soon as growth is checked the seed head is formed and bursts forth as soon as moisture is again applied." (*Osborn.*)

44893. CAPSICUM sp. Solanaceæ.**Pepper.**

From Guatemala. Collected by Mr. Wilson Popenoe, agricultural explorer. Received June 18, 1917.

"(No. 136a. June 1, 1917.) A perennial bush pepper from Momostenango (altitude 7,500 feet), in the Department of Totonicapam. The plant makes a large bush 6 feet or more in height and produces throughout the year waxy, golden-yellow, broad peppers about 2 inches long, bluntly three pointed at the apex, with thick meat and a few seeds near the base of the fruit. The taste is rather sharp, so that it can not be classed as belonging to the sweet peppers. It is an unusually handsome pepper and seems to be of excellent quality. It should be tested in the warmer portions of the United States." (*Popenoe.*)

44894. TRICHOSCYPHA sp. Anacardiaceæ.

From Loanda, Angola, Africa. Presented by Mr. John Gossweiler, Servicos de Agricultura, Angola. Received June 18, 1917.

"(No. 6882. February 27, 1917.) A palm-shaped unbranched tree with agreeably acid fruits borne on the trunk." (*Gossweiler.*)

44895 to 44901.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received June 20, 1917.

44895. CYNOMETRA CAULIFLORA L. Cæsalpiniaceæ.

A medium-sized tree, with a very irregular, knotty trunk, covered with thick, brown bark, marked with numerous grayish and whitish spots.

44895 to 44901—Continued.

The alternate, compound leaves are smooth and light green when mature, but when young are red or pink or, in some varieties, yellow. From the trunk and branches appear the corymbs of small pink or white flowers. The flattened, roundish, light-brown pods have a fleshy portion which is very palatable when stewed. The tree is a native of Java. (Adapted from *Van Nooten, Fleurs et Fruits de Java, pt. 6, pl. 4.*)

44896. HYDNOCARPUS ALPINA Wight. Flacourtiaceæ.

Var. *elongata*. Apparently an unpublished varietal name.

The species may be described as follows: A large tree, 70 to 100 feet in height, with very variable leaves (red when young and deep green when old) up to 7 inches in length and $2\frac{1}{2}$ inches in width, and dioecious flowers in axillary racemes. The fruit is globose, about the size of an apple, with a brown, hairy surface. The seeds yield an oil which is used as fuel, and the wood is employed for general carpentry. It is a native of the Nilgiri Hills in southern India. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 4, p. 308*, and from *Hooker, Flora of British India, vol. 1, p. 197.*)

44897. LAGERSTROEMIA SPECIOSA (Muenchh.) Pers. Lythraceæ.

(*L. flos-reginae* Retz.)

Crape myrtle.

A large deciduous tree, with smooth grayish bark, elliptic or lanceolate leaves 4 to 8 inches in length, and large panicles of flowers. The individual flowers are 2 to 3 inches wide and change from pink to purple from morning to evening. It is a native of India and Burma, where it is considered one of the most important timber trees, the light-red wood being hard and shiny. The tree has been introduced into southern California as an ornamental. (Adapted from *Bailey, Standard Cyclopedic of Horticulture, vol. 4, p. 1775*, and from *Gamble, Manual of Indian Timbers, p. 373.*)

44898. MUSSAENDA RUFINERVIA Miquel. Rubiaceæ.

A shrub with shiny, elliptic-oblong leaves 4 to 6 inches in length, reddish flowers about half an inch long in terminal corymbs, and oval-oblong fleshy berries. It is a native of Sumatra. (Adapted from *Miquel, Flora Indiae Batavae, vol. 2, p. 211.*)

44899. OTOPHORA ALATA Blume. Sapindaceæ.

Pisang tjina. A tall Javanese tree, with compound, glabrous, green leaves, and purplish flowers in pendulous axillary racemes, or sometimes solitary. The fruits are not much eaten, but hang in graceful clusters, remarkable for their beauty. The juice of the fruits is said to be useful in removing stains from linen. (Adapted from *Van Nooten, Fleurs et Fruits de Java, pt. 3, pl. 4.*)

44900. SARACA DECLINATA (Jack) Miquel. Cæsalpiniaceæ.

Kisokka. An ornamental tree, rarely more than 20 feet high, with alternate, pinnate leaves composed of six to eight pairs of oblong-lanceolate leaflets which are purplish brown when young. The bright-yellow, reddish tinged flowers occur in corymbs, sometimes on the trunk, and make a pleasing contrast with the crimson peduncles of the corymb. The oblong, flat pods are about a foot long and are a beautiful purplish crimson while immature. (Adapted from *Van Nooten, Fleurs et Fruits de Java, pt. 3, pl. 2.*)

44895 to 44901—Continued.

44901. STROPHANTHUS CAUDATUS (Burm.) Kurz. Apocynaceæ.
(*S. dichotomus* D. C.)

Kikoeija. A very ornamental, shrubby vine, with white-dotted, dark-brown bark, simple, opposite, smooth, oval-acuminate, green leaves, and large, showy, red and white flowers occurring either singly or in corymbs. The fruits are follicles sometimes 2 feet in length, and the seeds, which are provided with long, silky hairs, are very pretty. This vine is a native of the East Indies, where the women use the flowers to adorn their head-dresses. (Adapted from *Van Nooten, Fleurs et Fruits de Java*, pt. 7, pl. 1.)

44902 to 44905.

From Lawang, Java. Presented by Mr. M. Buysman. Received June 19, 1917.

44902. BRASSAIOPSIS SPECIOSA Dec. and Planch. Araliaceæ.

A small tree with the upper part of the branches, and sometimes the panicle, prickly. The glabrous, digitate leaves with lanceolate or elliptic leaflets are up to 8 inches in length and 3 inches in width, and the flowers occur in large panicles a foot or more in length. The tree is native to the eastern Himalayas from Nepal to Assam, from sea level up to 5,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 737.)

44903. LONICERA MACRANTHA (D. Don) Spreng. Caprifoliaceæ.

Honeysuckle.

A rather common Himalayan shrub with leathery, cordate-oblong, hairy leaves an inch wide and $2\frac{1}{2}$ inches long, and white, paired flowers, fading to yellow, appearing in subterminal panicles. It grows at altitudes of 6,000 to 10,000 feet or occasionally lower. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 10.)

44904. RIBES GRIFFITHII Hook. f. and Thoms. Grossulariaceæ.

An erect shrub about 8 feet high, with sharply serrate, 5-lobed leaves 2 to 3 inches long, and very lax, pendent racemes 3 to 6 inches long. The red, glabrous berries are about a quarter of an inch in length. The shrub is a native of the eastern Himalayas at altitudes ranging from 7,500 to 13,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 411.)

44905. RUBUS LINEATUS Reinw. Rosaceæ.

See S. P. I. No. 44845 for description and previous introduction.

44906. TRIFOLIUM PRATENSE L. Fabaceæ.

Red clover.

From Petrograd, Russia. Presented by Mr. I. A. Pullman, through Dr. Robert Regel, Bureau of Applied Botany. Received June 21, 1917.

"(March 25, 1917.) Late, tufted Second generation; Mr. I. A. Pullman, selector. Crop of 1916. From 2.7 acres were harvested 10,000 pounds of hay and 600 pounds of seeds." (*Pullman*.)

Introduced for the Office of Forage-Crop Investigations.

44907. BONTIA DAPHNOIDES L. Myoporaceæ.

From Curaçao, Dutch West Indies. Presented by Mr. H. M. Curran. Received June 22, 1917.

"A small, glossy leaved, ornamental tree, suitable for planting in dry situations near the sea in southern California and Texas." (*Curran.*)

A small tree with a habit so similar to that of the olive that it has been put into the olive family by botanists who did not recognize its true nature. It has alternate lanceolate leaves and axillary flowers which are either solitary or in pairs. The fruits are fleshy drupes, each containing eight hard seeds. (Adapted from *Lindley, Treasury of Botany, vol. 1, p. 156.*)

44908. ARTOCARPUS COMMUNIS Forst. Moraceæ. Breadfruit.
(*A. incisa* L. f.)

From Honolulu, Hawaii. Plant presented by Mr. Gerrit P. Wilder. Received June 25, 1917.

"*Ulu*. (Hawaiian variety.)" This variety, which now grows wild throughout the Hawaiian Islands, was originally introduced from Tahiti. It has large, rough, ovate, deeply lobed leaves, and the staminate flowers appear in large yellow catkins. The large-stemmed fruit is either round or oblong and varies from 5 to 8 inches in diameter. The thick tough rind, which is brownish at maturity, incloses a firm, very starchy, and somewhat fibrous pulp, which becomes mealy when cooked, slightly resembling a dry sweet potato, and is much esteemed as an article of diet. The tree is propagated by suckers or by layering. (Adapted from *Wilder, Fruits of the Hawaiian Islands, p. 100, pl. 48.*)

44909. CASUARINA STRICTA Ait. Casuarinaceæ.

From Burringbar, New South Wales, Australia. Presented by Mr. B. Harrison, through Mr. C. V. Piper. Received June 28, 1917.

An Australian tree, 20 to 30 feet in height, known in New South Wales as *Feld's fodder tree*, suitable for dry or semiarid sections. The foliage is eagerly eaten by cattle, especially in times of drought, and it is said that one tree has supported 8 to 10 head of stock at one time. Even in large quantities it does not appear to have an injurious effect on the cattle. The wood is used for cabinetwork and shingles and makes an excellent fuel. (*Harrison.*)

44910. CASSIA TOMENTOSA L. f. Cæsalpiniaceæ.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Gizeh Branch, Ministry of Agriculture. Received June 28, 1917.

A shrub, 10 to 12 feet high, with compound leaves composed of six to eight pairs of oval-oblong, obtuse leaflets with white-velvety lower surfaces. The flowers are deep yellow. It is a native of tropical America and is said to be a good winter bloomer in southern California. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 2, p. 680.*)

44911. ATTALEA sp. Phœnicaceæ. Palm.

From Venezuela. Presented by Mr. H. M. Curran. Received June 26, 1917.

"(No. 1027. From Colon, Estado Tachira, south of Lake Maracaibo, Venezuela, June 6, 1917.) *Coruba*, a common palm." (*Curran.*)

44912 and 44913. CYPHOMANDRA BETACEA (Cav.) Sendt. Solanaceæ. Tree-tomato.

From Guayaquil, Ecuador. Presented by Dr. Frederic W. Goding, American consul general. Received June 25, 1917.

"The fruit is delicious; it is eaten in the raw state or as preserves." (*Goding.*)

For a general description, see S. P. I. No. 44846.

44912. "Yellow tree-tomato. December 4, 1916."

44913. "White tree-tomato. December 6, 1916."

44914 to 44921.

From Zacuapam, Vera Cruz, Mexico. Secured from Dr. C. A. Purpus. Received June 25, 1917.

44914. ACACIA SPADICIGERA Cham. and Schlecht. Mimosaceæ.

Bull-horn acacia.

"An interesting shrub or small tree, with spreading branches armed with thorns resembling the horns of a bull and consequently called, together with its allies, *bull-horn acacia*. The thorns attracted the attention of early botanists from the fact that they are usually hollowed out and inhabited by stinging ants which serve as oodyguards, protecting the plant from herbivorous animals. The present species is very closely allied to *Acacia cornigera* of Linnæus, if not identical with that species. The hollow, indehiscent pods, terminating in sharp spines, inclose a number of hard seeds surrounded by a sugary aril which is much relished by cattle and other animals." (*W. E. Safford.*)

44915. AMARANTHUS sp. Amaranthaceæ.

Amaranth.

Quelite. "This is used as a vegetable, tasting like spinach. It grows about the houses and fields and does not need any care." (*Purpus.*)

44916. CACARA EROSA (L.) Kuntze. Fabaceæ.

Yam bean.

(*Pachyrhizus angulatus* Rich.)

For previous introduction and description, see S. P. I. No. 44839.

44917 and 44918. EXOGONIUM PURGA (Wender.) Benth. Convolvulaceæ.

(*Ipomoea purga* Hayne.)

Jalap.

A perennial twining vine which bears handsome rose-purple flowers similar to those of the common morning-glory. It is a native of the eastern slopes of the mountains of western Mexico, at altitudes of 5,000 to 8,000 feet, in regions where rain is very frequent and abundant. It is cultivated in Mexico and also in other tropical places for the sake of the drug which is extracted from the dried tubers. In cultivation the plant requires a rich forest loam, and must be supported by trellises. (Adapted from the *National Standard Dispensatory*, p. 834.)

44917. "Wild form." (*Purpus.*)

44918. "Cultivated form, from the sierras around Mount Orizaba." (*Purpus.*)

44919. LYCOPERSICON ESCULENTUM Mill. Solanaceæ.

Tomato.

"Var. *cerasiforme*. Growing wild in bean fields." (*Purpus.*)

A variety which is smaller and more erect than the common tomato and has smaller, more numerous, and grayer leaves. The globular red

44914 to 44921—Continued.

and yellow fruits are used for pickles and preserves. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1931.*)

44920. PSIDIUM sp. Myrtaceæ.

"A wild guava which tastes like a strawberry." (*Purpus.*)

44921. VITIS sp. Vitaceæ.

"*Callulos.*" "Several species of *Vitis* are found in the Mexican lowlands. The commonest of these is *Vitis tiliæfolia*. Another belongs apparently to the Muscadine group and produces fruits much like those of the James, although usually smaller. These tropical grapes should be brought together in some suitable region, such as extreme southern Florida, and there developed by a competent plant breeder. We do not have as yet a first-class table grape suited to strictly tropical regions. With the excellent material available for breeding, it should be comparatively simple to produce one." (*Popenoe.*)

44922 to 44924. ACACIA spp. Mimosaceæ.

From the vicinity of Khartum, Sudan, Africa. Presented by Mr. F. G. Walsingham, Gizeh Branch, Ministry of Agriculture, Cairo, Egypt. Received June 28, 1917.

44922. ACACIA ALBIDA Delile.

A large, much-branched tree, with whitish bark and stipular spines usually from one-half to three-quarters of an inch in length. The compound leaves are composed of four to six pairs of pinnae, and the white flowers occur in axillary spikes up to 5 inches long. The flat, oblong pods are 2 to 4 inches long. The tree is a native of tropical and northern Africa and yields a gum similar to gum arabic. The leaves are eaten by goats, and the bark is used in curing leather. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 339*, and from *Kew Bulletin of Miscellaneous Information, Additional Series IX, pt. 2, p. 288.*)

44923. ACACIA SEYAL Delile.

A small or medium-sized tree with brown or reddish brown bark, slender, recurved, ivory-white spines 1 to 2 inches long, and bipinnate leaves with three to nine pairs of pinnae. The very fragrant flowers are in heads, and the leathery, sickle-shaped pods are from 3 to 6 inches long. The tree is common in tropical Africa north of the Equator and is one of the principal gum-yielding acacias in the Nile region. This gum, which flows freely from all wounds, is of a bright amber color, becoming white and brittle when thoroughly dry. It has a relatively high viscosity and strong adhesive power. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 351*, and from *Kew Bulletin of Miscellaneous Information, Additional Series IX, pt. 2, p. 295.*)

44924. ACACIA VERUGERA Schweinf.

A tall tree, up to 60 feet in height, with gray or greenish gray bark, and long, slender, straight, spreading spines. The bipinnate leaves are composed of seven to eight pairs of pinnae, and the heads of flowers are in axillary fascicles of four to eight. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 354.*)

44925 to 44934. TRITICUM spp. Poaceæ.

From Paris, France. Presented by Messrs. Vilmorin-Andrieux & Co. Received June 30, 1917.

The following varieties were sent in response to a request for rust-resistant wheats.

44925 to 44932. TRITICUM AESTIVUM L. Wheat.
(*T. vulgare* Vill.)

44925. "Altkirch Red Winter."

44926. "Autumn Saumur; Gray St. Laud."

44927. "Broad-Headed Winter, hybrid."

44928. "Dreadnought or Steadfast; Early Hybrid. Suitable for autumn or early February sowing; good yielder; short straw."

44929. "Lamed hybrid; reddish yellow grain."

44930. "Red St. Laud."

44931. "Scotch Red, Blood Red, or Golden Drop."

44932. "Treverson."

44933. TRITICUM SPELTA L. Spelt.
"White beardless spelt."

44934. TRITICUM TURGIDUM L. Poulard wheat.
"Nonette de Lausanne."

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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JULY 1
TO SEPTEMBER 30, 1917.

(No. 52; Nos. 44935 to 45220.)



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INTRODUCTORY STATEMENT.

This small inventory covers a period of the World War during which every energy which could be utilized was directed to the most active war work and the shipping of seeds and plants was nearest at a standstill.

A few of the introductions, however, merit mention in this introductory statement.

The success of such introduced forage grasses as Rhodes grass and Sudan grass in the South and Southwest makes the introduction of four forage grasses from New South Wales (Nos. 45037 to 45040) and a promising collection from the Belgian Kongo (Nos. 45204 to 45214) of particular interest to those who are pioneering in the livestock industry in these warm regions.

Mr. Wilson Popenoe sent in from Guatemala seeds of an undescribed species of *Persea* (No. 44996), which, although having leaves very much like those of the avocado, has fruits with a fleshy, persistent calyx. The hybridizing which is going on between different races of *Persea americana* may make this species of value for hybridization purposes. Mr. Popenoe's large-fruited form of the coyó (No. 45081), which weighed 2 pounds and was of good quality, deserves to be called to the attention of tropical horticulturists and a comparison made on a considerable scale between it and the West Indian forms of avocado.

Just how different specifically the *Carica dodecaphylla* (No. 45141) of Argentina is from the ordinary *C. papaya* remains to be seen when they are grown side by side in Florida, but as already crosses between *C. candamarcensis* and *C. papaya* are being attempted it is important to bring into the hands of the plant breeders all the species and varieties obtainable.

Those interested in tropical species of *Rubus* may find in *Rubus racemosus* (No. 45044) from the Nilgiri Hills of India a useful form. The delicious rambutan of Java (*Nephelium lappaceum*) and the litchi of South China appear to have a rival in *N. bassacense* (No. 45131) from Cochin China, a species whose fruits have longer spines even than the beautiful rambutan.

The success of the Chinese grafted jujube in this country will make many experimenters interested in *Ziziphus mauritiana* (No. 44940), a tropical species the fruit of which is used, both fresh and dried, in India and of which the best variety comes from Kandahar.

Flavoring plants are not used as much in America as in France and Italy, except where Creole cooking still lingers. A tropical vine (No. 45220) with flowers and flower buds which impart a flavor of oysters to milk or potato soup may, however, interest those who live where the vine can be grown. One of the most conspicuous ingredients of the Japanese "rice tafel," or curry, of Java, is the pickled fruits of *Gnetum gnemon* (No. 45152), a shrub or small tree which furnishes not only singular potatolike fruits but edible leaves, which are stewed and eaten like spinach.

The Chinese pai ts'ai has met with such success in America and is now marketed by so many truck growers that a considerable number of people will be interested in a collection of varieties (Nos. 45185 to 45189) secured by Mr. Frank N. Meyer, which includes sorts which may be planted in April or May, others in August, and still others as late as September.

Ideal house palms are hard to find, and the pacayito of Guatemala (No. 44994) would seem to approach this ideal in that it has a graceful form while quite young, is suitable for the so-called fern dishes which adorn the center of the table, and because it fruits when not over a foot high, maturing its small, round, interesting seeds in the winter season.

The behavior on high pine land at Gotha, Fla., of the hardy palm, *Butia capitata* (No. 45009), a close relative of the genus *Cocos*, makes it seem worth while to distribute more widely over these pine lands this interesting species from Argentina, which bears showy, edible fruits.

Those who know Dr. Pittier well will be interested in his account of his experience with the fruit of an undescribed species of *Calycophyllum* (No. 45219), which resembles a wild passion fruit but is intense orange-yellow in color and outdoes the red pepper in flavor. It occurs in the forests near Caracas, Venezuela.

The brilliant blue-flowered *Salvia patens* has made everyone who saw it long for a more robust form. It is possible that in *S. hempsteadiana* (No. 44995) Mr. Popenoe has found one which can be grown more satisfactorily as an annual in this country.

To any who have watched the growth of hybrid walnut trees and who believe, as Dr. Sargent does, in the future of hybrid trees for timber production, the introduction of a tropical black walnut from Porto Rico (No. 45033) can hardly fail to be of interest, particularly when the scarcity of black-walnut timber is considered. Whether it

will be feasible to plant a whole mountain slope in the Adirondacks with one of Japan's largest and loveliest flowering cherry trees for the production of cherry wood remains to be seen. *Prunus serrulata sachalinensis* (Nos. 45074 and 45178), which forms a forest tree 60 feet tall and several feet in diameter, is probably the best timber-producing species of the true cherries. In 1906 the writer introduced for his private place in Maryland a collection of Japanese cherry trees, buying them from the Yokohama Nursery Co., of Japan. Out of 23 varieties several have shown themselves particularly well adapted to the soil and climate of the region, and although the Japanese names which accompanied them are some of them not listed in the Arakawa collection it is deemed desirable to make a distribution of budded trees from these trees which have proved themselves so well suited to the conditions on the Atlantic seaboard (Nos. 45049 to 45062).

An unusual interest attaches to two species of Rubiaceæ, *Pavetta indica* (No. 45153) and *Psychotria bacteriophila* (No. 45155) from Java, because of the fact that their leaves have embedded in them nodules, like the nodules on the roots of leguminous plants, which furnish to the plants nitrogen gathered from the air. The question of whether or not these shrubs will be of service in Florida in the enrichment of the soil must be answered by actual tests.

The botanical determinations of seeds introduced have been made and the botanical nomenclature revised by Mr. H. C. Skeels and the descriptive and botanical notes arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory, as of all the publications of this office. The manuscript of the inventory has been prepared by Mrs. Ethel M. Kelley.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., January 31, 1921.

INVENTORY.¹

44935. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ.

Pai ts'ai.

From Los Angeles, Calif. Purchased from Aggeler & Musser Co. Received July 6, 1917.

"A cabbage with short cylindrical solid heads. It is not suitable for spring planting, for when sown early it runs to seed without heading. It should be sown in seed beds late in July and transplanted to rich, moist earth, spacing 15 inches, in rows 2 to 3 feet apart. It should be harvested after the first light frost; the roots should be left on and the outer leaves removed. It may be stored in layers under dry straw with a heavy covering of soil. By cutting off all green leaf tips it can be cooked without the penetrating cabbage odor." (*Peter Bisset.*)

For previous introduction and further description, see S. P. I. No. 40604.

44936 and 44937. JUGLANS REGIA L. Juglandaceæ. Walnut.

From China. Nuts purchased from Mr. E. K. Lowry, manager, American Machinery & Export Co., Tientsin. Received July 2, 1917.

44936. "Sample No. 524. Soft shell, 1916 crop; grown in the district of Changli, northern China." (*Lowry.*)

44937. "Sample No. 525. Hard shell; grown in the Western Hills, west of Peking." (*Lowry.*)

44938. CANAVALI ENSIFORME (L.) DC. Fabaceæ. Jack bean.

From Mombasa, British East Africa. Presented by Kerslake Thomas & Co., Gotani estate, Changanwe, at the request of Mr. Henry P. Starrett, American consul, Mombasa. Received July 2, 1917. Quoted notes by Kerslake Thomas & Co.

"*Go-ta-ni* bean. It is an exceedingly heavy cropper, yielding about 2,200 pounds per acre under ordinary conditions. It is very hardy and a great drought resister. In this country it is a perennial, 2½ feet in height, and grows well on a clay loam and also on a light sandy soil. It would probably do well in the southern United States and California. Upon analysis it is found that the bean contains an exceptionally high percentage of albuminoids and oil, while the moisture is low. The high percentage of fiber is accounted

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received when introduced by the Office of Foreign Seed and Plant Introduction, and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names in American literature becomes necessary, the foreign varietal designations appearing there will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

for by the tough consistency of the outer covering of the bean. There is nothing to indicate that it would not be fit for food, although the tough outer covering would better be removed. No prussic acid has been detected in the macerated product."

Received as a hybrid between the so-called Madagascar butter bean (*Phaseolus lunatus*) and the sword bean (*Canavali gladiatum*).

44939. VICIA FABA L. Fabaceæ. Broad bean.

From Camden, N. J. Presented by Mr. A. T. Ivanhoe. Received July 2, 1917.

"In Russian called *Konskie Bobi* (horse bean), or plain *Bob*. Plant at the same time as peas in good garden soil which is not too dry." (*Ivanhoe*.)

44940. ZIZIPHUS MAURITIANA Lam. Rhamnaceæ. Bor.
(*Z. jujuba* Lam., not Mill.)

From Seharunpur, India. Seeds presented by Mr. A. C. Hartless, superintendent, Botanic Garden. Received July 2, 1917.

"The tree is mainly cultivated for its fruit, which on the wild or commoner kinds is more or less globose, and on the cultivated and improved kinds ovoid or oblong. The pulp is mealy, sweetish, with a pleasant taste, and some of the cultivated kinds are very good indeed. The dried fruits are sold in the bazaars of the Panjab under the name of *unab*; the best kind is imported from Kandahar." (*D. Brandis, Forest Flora of India*, p. 88.)

44941 and 44942. CARICA PAPAYA L. Papayaceæ. Papaya.

From Honolulu, Hawaii. Presented by Mr. J. M. Westgate, Agricultural Experiment Station. Received July 5, 1917.

These papaya varieties were introduced for comparative studies in papain content and fruit production.

44941. "No. 2594."

44942. "No. 3598-12."

44943 to 44953. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(*T. vulgare* Vill.)

From Paris, France. Presented by Vilmorin-Andrieux & Co. Received July 6, 1917.

The following varieties were sent in response to a request for rust-resistant wheats. (Quoted notes by Vilmorin-Andrieux & Co.)

44943. "*Alliés Hybrid*."

44949. "*Japhet, or Red Marvel; yellow grain*."

44944. "*Autumn Victoria*."

44945. "*Bearded Pearl of Nuisement*."

44950. "*Jolly Farmer's Hybrid, or Sensation*."

44946. "*Crépi*."

44951. "*Massy Hybrid*."

44947. "*Dattel Hybrid, or White Marvel*."

44952. "*Red-Bearded Autumn*."

44953. "*Treasure Hybrid*."

44948. "*Early Noé, or Blue*."

44954. BIXA ORELLANA L. Bixaceæ. Annatto tree.

From Sao Paulo, Brazil. Presented by the Empreza Editora de Chacaras e Quintaes. Received July 6, 1917.

"*Urucú*." A large-leaved tropical tree, about 30 feet high, with panicles of showy pinkish flowers. It is cultivated in the East and West Indies for the

annatto dye prepared from the orange-red pulp which surrounds the seeds. This dye is the coloring matter chiefly used in butter and cheese. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 510.*)

44955 and 44956.

From Auckland, New Zealand. Presented by Mr. H. R. Wright, Avondale Nursery. Received July 6, 1917.

44955. *IXERBA BREXIOIDES* A. Cunn. Escalloniaceæ.

"*Tawari.*" A beautiful evergreen tree, sometimes 70 feet tall, with thick, leathery, coarsely serrate leaves 3 to 7 inches long and very handsome waxy, white flowers $1\frac{1}{2}$ inches wide, occurring in flat panicles. It is a native of New Zealand, where it is not common, and is considered by some to be the most beautiful tree indigenous to that country. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 186.*)

44956. *RYMANDRA EXCELSA* Salisb. Proteaceæ.

(*Knightia excelsa* R. Br.)

A New Zealand tree, sometimes 100 feet in height, with stiff, linear-oblong, roughly toothed leaves 4 to 8 inches long and racemes of red, velvety flowers 2 to 3 inches long and 2 inches in diameter. The tree bears a considerable resemblance to the Lombardy poplar when seen from a distance. The wood is much used for cabinetwork. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 146.*)

44957 to 44961.

From Richmond, Victoria, Australia. Presented by Mr. F. H. Baker. Received July 7, 1917.

44957. *ALBIZZIA LOPHANTHA* (Willd.) Benth. Mimosaceæ.

(*Acacia lophantha* Willd.)

"*Cape or crested wattle.* Collected near Hursts Bridge, Victoria. Before planting soak in boiling water and allow to cool." (*Baker.*)

A shrub or small tree 6 to 20 feet high, with graceful, feathery foliage and yellowish summer-blooming flowers in spikes about 2 inches in length. The flat, oblong pods are thickened at the edges. The shrub is a native of Western Australia, often cultivated as a greenhouse shrub in temperate regions, and is now naturalized in southern California. (Adapted from *Botanical Register, vol. 5, pl. 361*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 243.*)

44958. *BRACHYCHITON ACERIFOLIUM* F. Muell. Sterculiaceæ.

(*Sterculia acerifolia* A. Cunn.)

An Australian tree, up to 35 feet in height, with very dark-green, shining, maplelike leaves 6 to 10 inches wide and scarlet bell-shaped flowers which hang from the tree in large clusters. It is sometimes called the *Australian flame tree*, because of the fact that when it comes into bloom upon shedding its leaves in midsummer the tree appears like a huge flame. In the Pacific States it is considered a very fine avenue tree. (Adapted from *The Pacific Garden, November, 1913.*)

44959. *EUCALYPTUS CALOPHYLLA* Lindl. Myrtaceæ.

Variety *rosea*. A medium-sized Australian tree with dense foliage and dark, corky, deeply furrowed bark. The thick, firm leaves are ovate-lanceolate, and the large pink flowers appear in large clusters. It is an ornamental tree of slow growth, not enduring frost or drought, and

44957 to 44961—Continued.

is used as a shade tree in California. The wood is tough and used for building, but is not durable under ground. The bark is rich in kino, and the fall bloom is valuable for bees. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 1152.)

44960. EUGENIA VENTENATH Benth. Myrtaceæ.

An Australian tree 40 to 60 feet high and 2 to 3 feet in diameter, with oblong-lanceolate leaves 3 to 5 inches long and flowers in compound panicles. The fruit is a roundish 1-seeded drupe about half an inch in diameter. The wood is of a gray or pinkish hue and beautifully marked. It is close grained, hard, heavy, and tough and is used for tool handles, flooring, etc. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 532, and from *Bailey, Queensland Flora*, part 2, p. 658.)

**44961. PANDOREA AUSTRALIS (R. Br.) Spach. Bignoniaceæ.
(*Tecoma australis* R. Br.)**

A beautiful climbing vine with abundant, dark-green foliage of handsome appearance and loose terminal panicles of yellowish flowers. It is a native of New South Wales, where it is called the *wonga-wonga* vine, and is cultivated in the southern United States. It requires a rich soil and must be watered freely during the dry spring months. If frozen it readily sprouts from the vigorous rootstock. (Adapted from *W. C. Steele*, in the *Florida Agriculturist*, Oct. 23, 1901.)

44962. PISTACIA CHINENSIS Bunge. Anacardiaceæ.**Chinese pistache.**

From Chefoo, China. Seeds obtained through Mr. Lester Maynard, American consul. Received July 10, 1917.

A beautiful Chinese tree with graceful pinnate leaves which are at first dark red, then glossy green, and finally, in autumn, become scarlet, purple, and yellow. Trees of previous introductions have done so well in many parts of our country that we can now recommend this beautiful tree for park and avenue planting. Where the winters are not too severe it has withstood temperatures of 4° F. without injury, as at Washington, D. C. When planted in a well-drained situation it is especially valuable for the Southern and Pacific Coast States and should become a welcome addition to the list of cultivated trees because of the beautiful autumnal coloration of its foliage. Individual specimens sometimes live to be centuries old and attain great size. The tree may prove a good stock for *Pistacia vera* L., the edible pistache nut.

44963 and 44964. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From St. Croix, Virgin Islands. Cuttings presented by Dr. Longfield Smith, director, Agricultural Experiment Station. Received July 10, 1917.

44963. *Santa Cruz 12/37.*

44964. *Santa Cruz 13/32.*

44965 to 44993.

From Argentina. Presented by Mr. W. Henry Robertson, American consul general, Buenos Aires. Received July 3, 1917. Quoted notes by Dr. D. N. Shoemaker.

These seeds are a collection obtained by the Argentine Department of Agriculture from various parts of Argentina.

44965 to 44993—Continued.

44965 to 44967. PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.

44965. (No. 2. Estación Experimental, La Banda, Santiago del Estero.) *Manteca*. "A form of *White Sieva Lima*."

44966. (No. 3. Estación Experimental, Tigre.) *Manteca*. "A form of *White Sieva Lima*."

44967. (No. 17.) *Small Sieva Manteca*. "The *Small Sieva Lima*."

44968. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.

(No. 5.) *Colorado de España*. "Identified as the ordinary *Scarlet Runner*."

44969 to 44980. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

44969. (No. 1. Estación Experimental, La Banda, Santiago del Estero.) *Blanco criollo*. "Similar to *California Small White* bean."

44970. (No. 4.) *Blanco de manteca pequeño*. "Similar to *Medium* beans of New York State."

44971. (No. 6.) *100 × 1* (dwarf). "A bright-brown small bean not like any well-known variety in the United States."

44972. (No. 8.) *Dutch Case Knife*. "The variety as grown in the United States."

44973. (No. 9.) *Bicolor*. "A large bean with white ground color over half of the bean on the dorsal side; remainder of the bean brown and purple mottled. Not like any variety commonly grown in the United States."

44974. (No. 10.) *Bicolor*. "Identical with No. 9."

44975. (No. 11.) *Thorburn Large*. "Similar to *Giant Stringless Green Pod*."

44976. (No. 12.) *Hardlong French*. "A small white bean the size of *California Small White*."

44977. (No. 13.) *Hudson Wax* (dwarf). "This is not *Hudson Wax*; the seeds are black. It may be *Wax Podded*."

44978. (No. 14.) *Negro de Belgica* (dwarf). "This variety has small black beans."

44979. (No. 15.) *Blanco de manteca pequeño*. "White beans, about the size of *Medium* beans of New York State."

44980. (No. 18.) *Southern Prolific*. "True to name as grown in the United States."

44981 to 44991. PISUM SATIVUM L. Fabaceæ. Garden pea.

44981. (No. 19.) *Ojo negro*. "A large smooth pea with a black hilum."

44982. (No. 20.) *Maravilla del mercado*. "A slightly wrinkled white pea."

44983. (No. 21. Estación Experimental, La Banda, Santiago del Estero.) *Automovil*. "A large wrinkled pea."

44984. (No. 22. Estación Experimental, La Banda, Santiago del Estero.) *Orgullo del mercado*. "A small wrinkled pea."

44985. (No. 23. Estación Experimental, La Banda, Santiago del Estero.) *William Hurst* (dwarf). "A small wrinkled pea."

44965 to 44993—Continued.

44986. (No. 24. Estación Experimental, La Banda, Santiago del Estero.) *De 40 dias*. "A greenish medium-sized semiwrinkled pea."

44987. (No. 25. Estación Experimental, La Banda, Santiago del Estero.) *Senador* (dwarf). "A medium-sized wrinkled pea."

44988. (No. 26. Estación Experimental, La Banda, Santiago del Estero.) *Cien por uno*. "A medium-sized wrinkled pea."

44989. (No. 27. Estación Experimental, La Banda, Santiago del Estero.) *Telegrafo*. "A rather small wrinkled pea."

44990. (No. 28. Estación Experimental, La Banda, Santiago del Estero.) *Gladiator* (dwarf). "A large wrinkled pea."

44991. (No. 29. Estación Experimental, Tigre.) *Comun*. "A small, smooth, green pea."

44992 and 44993. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

44992. (No. 7.) *Careta*. "Identified as a black-eyed cowpea."

44993. (No. 16.) *Southern Creaseback*. "Identified as a cowpea."

44994 to 44999.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer of the Bureau of Plant Industry. Received July 19, 1917. Quoted notes by Mr. Popenoe.

44994. *CHAMAEDOREA* sp. Phœnicaceæ.

Pacayito palm.

"(No. 150. July 9, 1917.) Plants of a dwarf palm collected in dense forests near Purula, Department of Baja Vera Paz, at an altitude of approximately 5,500 feet.

"This species is usually called by Spanish-speaking Guatemalans *pacayito*, which means 'small pacaya.' By the Indians of Alta Vera Paz, who speak the Kekchi language, it is called *ko-kiip*, which also means 'small pacaya,' and in Purula I heard it called *pamak*. This name is doubtless given because of the resemblance to the common *pacaya*, a palm which is extensively cultivated in Guatemala for its edible flower buds. Probably the name *pacayito* may be chosen as best suited to use in the United States.

"Judging from accounts given me by various residents of Vera Paz, this palm commonly occurs in the mountains of that region at altitudes of about 4,000 to 6,000 feet. It always grows in dense forests and must be considered a shade and moisture loving species. The soil in which it grows is nothing but decayed leaves for the first several inches and is kept continually moist by the abundant rains of this region. In Coban the *pacayito* is a favorite house plant, being grown in pots and tubs and used to decorate living rooms and patios. In the city of Guatemala it is occasionally used for the same purpose, the plants being brought down from Coban.

"In the forests the *pacayito* seems never to reach a greater height than 3 feet. It is a true dwarf (one might almost call it a miniature palm), for it reaches maturity and comes into flower when not over a foot high. This dwarf habit makes it of unusual interest as a pot plant for the North, as it can be fruited in an ordinary living room when growing in an 8-inch pot.

"It makes its character leaves almost as soon as the young plant is out of the seed. I have seen many plants in the forest which were not

44994 to 44999—Continued.

over 4 inches high and already had two to four fully characterized leaves. When quite small it strongly resembles *Cocos weddelliana*, but the pinnae are somewhat broader and not so numerous. For fern dishes in the Northern States it should have great value.

"When mature, the plant has a slender trunk, perhaps half an inch thick and 2 feet high. The leaves are a foot to 18 inches in length, rather finely pinnate, deep green, graceful, with the rachis stiff but arching slightly. In Vera Paz the flowers are produced in June and July, and the small, round seeds, about as large as small peas, ripen in December.

"Since it is found at considerable elevations in Vera Paz, it seems likely that this palm will be sufficiently hardy for cultivation in the open in California and Florida. It should be provided with ample shade, however, and planted in a very moist situation in soil containing a large proportion of leaf mold.

"As a house plant for the Northern States and for use in fern dishes it seems to me that this plant possesses unusual possibilities, and I strongly recommend it for trial."

For an illustration of the pacayito palm, see Plate I.

44995. SALVIA HEMPSTEADIANA Blake. Menthaceæ.

"(No. 151. July 9, 1917.) Plants of an herbaceous perennial collected on the banks of a small stream at Purula, Department of Baja Vera Paz (altitude 5,200 feet).

"The plants commonly grow $1\frac{1}{2}$ to 2 feet in height, and soon after the beginning of the rainy season (May) send up spikes of brilliant blue flowers, tubular in form and about an inch long. It is a conspicuous thing when in bloom, and is strongly recommended for trial in California and Florida, where it should be hardy."

44996. PERSEA sp. Lauraceæ.

"(No. 152a. Seeds from the Chuacus Mountains, near Rincon Grande, about 5 miles from Salama, at an approximate altitude of 3,000 feet. July 9, 1917.)

"I do not know what this species may be; possibly it is as yet undescribed. Only one tree has been seen up to the present, and this was erect, rather slender in habit, and 30 feet in height. The foliage strongly resembles that of *Persea americana*, but is more heavily pubescent beneath than is common in that species. In form and size the leaves could not be distinguished from some of the cultivated avocados. The young leaves and branchlets are covered with a velvety tomentum.

"The fruits, which ripen in June, are oval or oblong-oval in outline, about $1\frac{1}{2}$ inches in length, shining black in color, with a membranous skin and a very small amount of greenish pulp having a strongly resinous taste. The seed is quite large in comparison with the size of the fruit, elliptical in outline, with the seed coats thin, brownish, and brittle, and adhering closely. The cotyledons are whitish, with the embryo at the base of the seed. The fruit is distinct from that of the avocado in having a large, fleshy, bluntly toothed calyx, pinkish or whitish in color, which remains on the tree when the fruit falls.

"This species is introduced in connection with the experiments now being carried on with a view to determining the best stock on which to bud the avocado."

44997. DIPHYSA sp. Fabaceæ.

"(No. 153a. July 9, 1917.) Seeds of a leguminous shrub common in the mountains of the northern part of the Department of Baja Vera Paz,

44994 to 44999—Continued.

between Salama and Santo Tomas. It grows in dry, rocky places and also along the banks of streams, reaching a height of about 3 feet under the former conditions and 6 feet under the latter. The foliage is coarsely pinnate, with oval, glaucous leaflets. The flowers, which are produced in clusters of considerable size, are of a deep lilac and quite attractive. In form they resemble the flowers of the common pea, but are smaller, being about half an inch broad. The shrub seems well worthy of trial in California and Florida."

44998. *TABEBUIA PENTAPHYLLA* (L.) Hemsl. Bignoniaceæ.

"(No. 154a. July 9, 1917.) *Matiliscuate*. Seeds of a handsome flowering tree found in north-central Guatemala, especially in the Valley of Salama, and commonly growing near small streams. I have seen it at altitudes of 2,000 to 3,500 feet. The tree is about 35 feet high at maturity, with a spreading crown, deciduous during the latter part of the dry season (January to March), and producing large clusters of pink flowers which make the tree a mass of color visible for some distance. Its flowering season is from January to March, and the seeds, which are produced in long, slender pods, ripen in May and June.

"As an ornamental tree for cultivation in southern Florida and possibly also in California the *matiliscuate* seems well worthy of trial. Its only defect is its habit of dropping its leaves during the dry months of the year. If it flowers in the same months in Florida as it does in Guatemala, however, it should be a valuable addition to the flowering trees of that region. It thrives on heavy but rocky land and does not seem to require a large amount of water."

44999. *PERSEA SCHIEDEANA* Nees. Lauraceæ.

Coyó.

"(No. 161. Bud wood from the sitio of Don David Pierri, San Cristobal, Vera Paz, July 3, 1917.)

"The *coyó*, *chucte*, *shucte*, or, as it is sometimes called, *chaucte*, is a species of *Persea* which is undoubtedly indigenous in this region. It is reported also from Zacapa and Chiquimula, but I have seen it only here up to the present. The tree grows on the banks of streams, where the soil is moist and rich. The hills in this region are dry, rocky, and covered with a scanty vegetation of cacti, *Pereskia*, thorny leguminous shrubs and small trees, and a few other plants. As well as being indigenous in this region, the *chucte* must be classed as a cultivated fruit tree, since it is occasionally, but not often, planted in gardens.

"At the present time the *chucte* is neither in flower nor in fruit. It is said to bloom in February and to ripen its fruit in May and June, continuing until August. One of the two trees which I have seen (this one standing on the north bank of the Rio Motagua a short distance above El Rancho) was about 60 feet in height. The other one was not more than 45 feet high. The general appearance of the tree, its habit of growth, size, and character of bark and foliage are remarkably suggestive of an avocado of the West Indian type, but on closer examination it is seen that the leaves are larger than is common with the avocado, the venation is impressed on the upper surface of the leaf, and, most conspicuous of all, the ends of the young branchlets and the petioles are covered with a ferruginous tomentum. The foliage is said to fall just before the tree comes into bloom, the flowers making their appearance along with the new leaves.



THE PACAYITO, A NEW ORNAMENTAL PALM FROM GUATEMALA.
(CHAMAEDOREA SP., S. P. I. NO. 44994.)

These graceful dwarf palms are used very effectively for home decoration in Guatemala. The palms shown here were in the "corredor" of the residence of Don Enrique Dieseldorff at Coban. It is a question whether or not they will endure the steam heat of buildings in the colder parts of the United States, but they will surely be of value on the west coast and in the Gulf region. (Photographed by Wilson Popenoe, Coban, Guatemala, September, 1917; P17473FS.)



A YOUNG COYÓ TREE IN GUATEMALA. (*PERSEA SCHIEDEANA* NEES.,
S. P. I. No. 44999.)

Wilson Popenoe considers the coyó a better flavored fruit than the avocado, to which it is closely allied. Unfortunately, horticulturists have given it no attention up to the present time; doubtless careful selection and breeding will produce superior varieties, and it deserves to be called to the attention of all tropical horticulturists, as it constitutes a new fruit. It occurs in Guatemala at altitudes ranging from 300 to 6,000 feet and will also possibly succeed in southern California and in southern Florida. (Photographed by Wilson Popenoe, Sepacuite, Guatemala, November 28, 1916; P16963FS.)

44994 to 44999—Continued.

"The leaves are clustered at the ends of the branchlets, though not crowded. The leaf blades are oblong-elliptic, truncate at the base, sharply acute to shortly acuminate at the apex, 8 to 12 inches long, 4 to 7 inches broad, bright green and glabrous above, glaucous and rather heavily pubescent below; the pubescence is ferruginous on the midrib and to a less degree on some of the larger transverse veins. The venation is slightly impressed on the upper surface and very prominent below. The petioles are 1 to 1 $\frac{3}{4}$ inches long, narrowly canaliculate toward the articulation with the leaf blade, and ferruginous pubescent like the branchlets from which they arise.

"The fruit is described as long and slender, almost black, with a large and long seed and thin flesh. The flavor is described as rich and bland, similar, but superior, to that of the avocado. It is highly esteemed by the inhabitants, and it is stated that it has even been shipped to the city of Guatemala and sold in the market there." (Quoted from description furnished with Mr. Popenoe's No. 72.)

For an illustration of a coyó tree, see Plate II.

45000 and 45001.

From Amsterdam, Netherlands. Procured through Mr. Frank W. Mahin, American consul, from J. B. Wijs & Zoon. Received July 21, 1917.

"Official statistics as to the exports of these mustards are lacking, but it is estimated that they aggregate about 4,000 tons annually, while the home consumption is about 500 tons. This seed in Holland is sown in May in sandy soil and must grow for two years." (*Mahin.*)

These seeds were introduced for the Bureau of Chemistry, for investigations of commercial mustards.

45000. BRASSICA ALBA (L.) Boiss. Brassicaceæ. White mustard.

45001. BRASSICA NIGRA (L.) Koch. Brassicaceæ. Black mustard.

45002 and 45003. LINUM USITATISSIMUM L. Linaceæ. Flax.

From Amsterdam, Netherlands. Procured through Mr. Frank W. Mahin, American consul, from J. B. Wijs & Zoon. Received July 21, 1917.

These seeds were introduced for the Office of Fiber-Plant Investigations.

45002. No. 1. Blue blossom. **45003.** No. 2. White blossom.

45004. HYPHAENE THEBAICA (L.) Mart. Phœnicaceæ.

Doum palm.

From Cairo, Egypt. Fruits presented by Mr. F. G. Walsingham, Horticultural Division, Gizeh Branch, Ministry of Agriculture. Received July 21 and 27, 1917.

"Obtained in the District of Aswan, Upper Egypt, where the species is fairly abundant." (*Walsingham.*)

An Egyptian palm, 3 to 9 meters (10 to 40 feet) in height, with a trunk about 30 centimeters (a foot) in diameter, either simple or, more frequently, dichotomously branched. The 20 to 30 fan-shaped leaves on the ends of each branch are sheathed at the base by spiny margined petioles. The spadices are 80 to 100 cm. (32 to 40 inches) in length, and up to 5 cm. (2 inches) thick at the base. The fruit is usually an obliquely ovoid nut about 6 cm. (2 $\frac{3}{4}$ inches) long. (Adapted from *Muschler, Manual Flora of Egypt, vol. 1, p. 188.*)

45005. CRANICULARIA ANNUA L. Martyniaceæ.

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received July 23, 1917.

A coarse, wide-spreading, rank annual, about 2 feet high, with large, opposite, palmately lobed leaves with dentate margins, racemes of white flowers, and a two-valved many-seeded capsule with a long incurved beak. It is a native of northern South America, where it is known as *Creole scorzonera* and where the thick, fleshy root is preserved in sugar as a comfit. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 877.)

45006 to 45008.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received July 23, 1917.

45006. FOENICULUM VULGARE Hill. Apiaceæ.**Fennel.**

Fenouil doux. The sweet fennel is quite popular as a winter and spring vegetable in southern Europe. The young shoots are eaten like asparagus tips, either plain boiled or served with a sauce. The plant will grow on very stony, steep slopes, where it serves as a soil binder, but it responds readily to better treatment. (Adapted from *letter of Dr. A. Robertson Proschowsky dated June 30, 1917.*)

45007. MUSA PARADISIACA SEMINIFERA (Lour.) Baker. Musaceæ.**Plantain.**

A wild seed-bearing form of the plantain, having small, oblong, greenish fruits full of seed. These fruits are about a third of the size of the common banana and are of pleasant taste, although encumbered by numerous seeds. The plant is quite ornamental and hardier than the common banana, so that it might be possible, by selection or hybridization, to extend the range of banana culture. (Adapted from *letter of Dr. A. Robertson Proschowsky dated June 30, 1917.*)

45008. PRIOTROPIS CYTISOIDES (Roxb.) Wight and Arn. Fabaceæ.

A leguminous bush with slender branches, trifoliate leaves 2 to 3 inches long, and numerous many-flowered racemes of pale-yellow flowers. It is a native of the tropical region of the eastern Himalayas and is cultivated in Nice, France, where from November to April the abundant nectariferous flowers furnish about the only food available to the bees. Its winter-blooming habit and attractive flowers make it a desirable ornamental for regions not subject to severe frost. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 65, and from *letter of Dr. A. Robertson Proschowsky dated June 30, 1917.*)

45009. BUTIA CAPITATA (Mart.) Becc. Phœnicaceæ.**Palm.**

From Gotha, Fla. Fruits presented by Mr. H. Nehrling. Received July 23, 1917.

"This is the most massive of hardy Cocos species which I have. The bunches of fruits usually weigh about 50 pounds each. I raised the plant from seeds received from the late Dr. Hermann Burmeister, of Buenos Aires, who informed me that the seeds had been collected by Dr. Niederlein at Entre Rios, Argentina, about 22 years ago. These Cocos species are the most beautiful and hardy on the high pinelands, and most of them are edible and very aromatic." (*Nehrling.*)

45010. SPONDIAS LUTEA L. Anacardiaceæ. Yellow mombin.

From Bahia, Brazil. Presented by Dr. Leo Zehntner. Received July 24, 1917.

"This species is generally considered inferior in quality to the red mombin (*Spondias mombin*). Its cultivation is much less extensive, but it occurs abundantly as a wild tree in many tropical regions. The name hog-plum, which has been applied to it in the West Indies, has perhaps given it a worse reputation than it merits. This name should not, as Cook and Collins point out, cast any reflection on the character of the fruit, inasmuch as it refers to the fact that hogs are extremely fond of it and fatten upon the fruit which falls to the ground from wild trees in the forest.

"The tree is tall and stately in appearance. Under favorable conditions it may reach 60 feet in height. The leaves are 8 to 12 inches long, composed of 7 to 17 ovate-lanceolate or lanceolate-serrulate leaflets, oblique at the base and $2\frac{1}{2}$ to 4 inches in length. The yellowish white flowers are borne in loose panicles 6 to 12 inches long. The fruit is ovoid, commonly an inch in length, bright yellow, with a thin skin and an oblong seed of relatively large size. The flesh is yellow, very soft and juicy, and of subacid, rather pungent flavor. Many varieties are scarcely pleasant to the taste; others are sweet and agreeable. The fruit is usually eaten while fresh.

"This species is considered to be cosmopolitan in the Tropics. In Spanish-speaking countries it is called *jobo*. In Brazil it is known as *cajá*. In the French colonies the names *mombin jaune* and *prune myrobalan* are current.

"Occasional trees are seen in cultivation throughout tropical America. Cook and Collins state that it is planted extensively in Porto Rico. In southern Florida it succeeds, but has never become common. In California no trees of fruiting age are known. The species is rather susceptible to frost; it is found in the Tropics only at low elevations, and it probably will not withstand temperatures much below the freezing point, particularly when young." (*Wilson Popenoe*.)

45011 to 45018.

From Venezuela. Presented by Mr. H. M. Curran. Received July 24, 1917.

45011. ACACIA sp. Mimosaceæ.

"(Caracas, 500 to 3,000 feet elevation.) *Cuji*. A Prosopislike tree with a short trunk; requires more moisture than Prosopis." (*Curran*.)

45012. ACACIA FARNESIANA (L.) Willd. Mimosaceæ.

"*Cassie*. From Caracas."

A much-branched shrub 6 to 10 feet high, with compound leaves having linear leaflets and very fragrant deep-yellow flowers in large, globular heads. The cylindrical, indehiscent pods finally become turgid and pulpy. The shrub is probably a native of tropical America, but is now cultivated as an ornamental in many places and is grown in France for perfume. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 1, p. 188.)

45013. BUMELIA sp. Sapotaceæ.

"(La Guaira, June, 1917.) A small tree growing in the forests along the coast, bearing large quantities of edible black fruits." (*Curran*.)

45014. FURCRAEA sp. Amaryllidaceæ.

"(No. 1128. Caracas and Puerto Cabello, 4,000 to 5,000 feet. June 27, 1917.) The cultivated *cocuiza*, one of the fiber plants of Venezuela." (*Curran*.)

45011 to 45018—Continued.**45015.** MALPIGHIA sp. Malpighiaceæ.

"(Puerto Cabello.) *Simaruco*. A tree or shrub; ornamental when in fruit; fruits red, edible." (Curran.)

45016. PASSIFLORA QUADRANGULARIS L. Passifloraceæ. **Granadilla.**

"(La Guaira. June, 1917.) *Oyama*. Fruits large, 8 inches long and 6 inches in diameter. Used as a preserve." (Curran.)

A stout quick-growing climber, with large oval leaves and square stems. Its large greenish yellow fruit is not unlike a short and thick vegetable marrow and contains in its hollow center a mass of purple subacid pulp mixed with the flat seeds. The root is usually swollen and fleshy and is sometimes eaten like a yam. The plant is propagated by seeds or cuttings, and the flowers should be fertilized by hand to insure good crops. Although a native of tropical America, this plant is widely cultivated throughout the tropical regions of the Old World. (Adapted from Macmillan, *Handbook of Tropical Gardening and Planting*, p. 180.)

45017. RUBUS sp. Rosaceæ. **Blackberry.**

"(No. 1119. Caracas, June, 1917.) The common blackberry of the upper slopes, 4,000 to 6,000 feet altitude." (Curran.)

45018. (Undetermined.) Araceæ.

"(No. 1140. Puerto Cabello, June, 1917.) A terrestrial or epiphytic aroid; suitable as a house plant." (Curran.)

45019. ASIMINA TRILOBA (L.) Dunal. Annonaceæ. **Papaw.**

From De Kalb, Mo. Cuttings presented by Mr. J. C. Roach. Received July 27, 1917.

"(July 23, 1917.) *Long John* papaw. Grown on the John Cole farm, 3 miles south of De Kalb." (Roach.)

The fruit of this variety is of unusual shape, very long in proportion to its breadth (sometimes almost like a banana in form), and weighs 7 or 8 ounces. The quality is good but not equal to that of several others, and the fruit is a good shipper, perhaps the best of all, the skin being notably tough and thick. (Adapted from *Journal of Heredity*, January, 1917, in which is described the offer of the American Genetic Association which brought this and many other varieties of papaws together for comparative study.)

45020 to 45022.

From Guatemala. Collected by Wilson Popenoe, Agricultural Explorer of the Bureau of Plant Industry. Received July 26, 1917. Quoted notes by Mr. Popenoe.

45020. ANNONA CHERIMOLA Mill. Annonaceæ. **Cherimoya.**

"(No. 164. Bud wood from the sitio of Julio Guerra, Antigua, July 16, 1917.)

"An unusually productive and otherwise desirable cherimoya from the garden of Julio Guerra, who keeps a small tienda across the street from the rear of the Hotel Rojas. This is the most productive tree I have seen in this entire region, though I have examined a large number, not only in Antigua but in many of the surrounding villages.

"There is one peculiarity worthy of mention. Both this tree, and the one in Duenas, from which I obtained bud wood (No. 49, S. P. I. No. 43485), have been topped within the last few years, and the present crown is all new wood. These two trees are the only ones I have seen

45020 to 45022—Continued.

bearing good crops of fruit, and this naturally brings up the question, Is the productiveness of these trees due to the fact that they have been topped? It rather looks as though it may be, and it would be well worth while experimenting with some of the old seedling trees in southern California to see if topping would render them more productive. Topping is not done here with the intention of making the trees produce more fruit; it has been purely accidental in these two cases. The large limbs have been cut back within a foot or two of their union with the trunk. From the stubs numerous sprouts have made their appearance, and on these much more fruit is produced than upon the fruiting branches of the ordinary crown.

"The tree from which this bud wood was taken has a trunk about 10 inches in diameter, and the crown is now about 10 feet broad. I counted over 50 fruits on the tree, which is a large crop for a cherimoya.

"In form the fruits are heart shaped or bluntly conical, much freer from irregularities than many varieties, of large size, averaging about a pound in weight. The surface is clean and almost smooth, the carpellary areas being indicated by raised lines.

"This is a variety of pleasing form and appearance, of good size for handling and marketing, and the quality seems to be good. It ripens earlier here than most of the other seedlings, the first fruits having already dropped, while the fruits on most of the other trees I have seen are still immature. It should be tried in California."

45021. ANNONA CHERIMOLA Mill. Annonaceæ.**Cherimoya.**

"(No. 165. Cuttings from the sitio of Julio Guerra, Antigua, July 16, 1917.) A productive variety of the *cherimoya*, or *anona* as it is called in the Guatemalan highlands.

"The tree is small, though not young. Apparently it has been cut back heavily, leaving only one limb of the several which formerly composed the crown. The height of the tree at present is about 15 feet, while the trunk is about 8 inches thick at the base. The crown is slender and unsymmetrical.

"At this date (July 16) the tree is carrying 102 young fruits and is still flowering. The season of ripening is from November to January. In form the fruits are cordate to conical. When ripe the larger ones will weigh more than 1 pound. The surface is rough, the carpellary areas on some specimens giving rise to short protuberances, while on other specimens the protuberances are almost wanting.

"Julio Guerra says the ripe fruit has very white flesh and is of good quality. The unusual productiveness of the parent tree commends the variety for trial in California and Florida."

45022. CHAMAEDOREA sp. Phœnicaceæ.**Pacaya palm.**

"(No. 167a. Seeds from San Cristobal, Department of Alta Vera Paz, July 16, 1917.) Nearly every garden in Coban, San Cristobal, and other towns of Alta Vera Paz contains a number of these attractive palms, grown not so much for ornament as for the edible inflorescences which they produce. In some parts of central Guatemala, such as San Antonio Aguas Calientes, the *pacaya* is occasionally seen, but it appears to be much more abundant in Vera Paz than in any other section of the Republic. It is cultivated at varying altitudes, the lowest observed being about 3,000 feet and the highest 5,200. From the fact that it succeeds at such high elevations as 5,000 feet it must be considered

45020 to 45022—Continued.

slightly hardy and may be found sufficiently so to be grown outdoors in southern California and Florida.

"The palm grows to a height of 15 to 25 feet, more commonly the former than the latter. The trunk is slender, erect, and about 2 inches thick. The leaves are 3 to 6 feet long, with 18 to 24 pairs of pinnæ subopposite toward the base of the rachis, often becoming alternate farther up. The lowermost pinnæ are narrow and not over 8 or 10 inches long; farther up they become 18 or 20 inches long and nearly 2 inches wide. In general, the foliage of this palm suggests that of the well-known *Areca lutescens* (properly *Chrysalidocarpus lutescens*) of northern conservatories. It is graceful, of rich green color, and in every way pleasing.

"The inflorescences appear from October to May, a few coming at other seasons of the year. They appear along the trunk a short distance beneath the lowermost leaves. Before the spathes burst and the flowers appear, these buds, which are 8 to 12 inches in length, are cut for use. The part which is eaten is the tender, white, much-branched inflorescence within the spathe. Its preparation for the table consists in dipping it in a batter made of eggs and then frying it; in enveloping it in an omelet; in boiling it and serving it as a vegetable; or in mixing it with other vegetables to form a salad. When very young and tender its flavor is most agreeable. When the buds are nearly ready to burst, the inflorescence frequently has a bitter taste, which is objectionable to some people, though much liked by others.

"This palm grows on a variety of soils, seeming to do well on clay and also on black sandy loam. It is frequently planted in gardens among coffee bushes, and in some sections it is planted beneath the shade of large trees. It may be necessary to supply shade for the plant in regions such as southern California. If so, this can be easily done by means of a lath or slat house.

"As an article of food the pacaya is much used in Guatemala and by local standards commands a good price, single inflorescences selling commonly at five or six for a peso (2½ cents) in the regions where they are grown. The leaves are widely used for decorative purposes, being cut to adorn houses during the many fiestas which take place in this country."

45023. SOLANUM TUBEROSUM L. Solanaceæ.**Potato.**

From Honolulu, Hawaii. Tubers presented by Mr. J. M. Westgate, agronomist in charge, Hawaii Agricultural Experiment Station. Received July 24, 1917.

Portuguese Red. These were submitted by Mr. J. B. Thompson, superintendent of the Glenwood Experiment Station, Hawaii. They are important because they are remarkably immune to the diseases (late-blight, wilt, etc.) which affect the ordinary potato." (*Westgate.*)

45024. RIBES SPECIOSUM Pursh. Grossulariaceæ.**Gooseberry.**

From Los Angeles, Calif. Presented by Mr. P. D. Barnhart. Numbered August 2, 1917.

"The books say that this is evergreen, but this is not true, for no matter how much water may be applied to it during the rainless season, it sheds its leaves and becomes dormant. As soon as the rains set in it springs into life, the rich, dark-green foliage appearing as though it were varnished. The new growth is bright red, thickly beset with spines of the same color. The brilliant

red flowers are pendent all along the stems of the previous year's growth. A hillside covered with these plants is a glorious sight. For some reason very few of the bushes set fruit." (*Barnhart.*)

45025. ULMUS PUMILA L. Ulmaceæ.

Elm.

From Peking, China. Collected by Mr. Frank N. Meyer. Agricultural Explorer of the Bureau of Plant Industry. Received July 24, 1917.

A rather low Chinese tree, from 10 to 16 meters (35 to 50 feet) in height, with a short trunk up to 2.6 meters (8½ feet) in circumference. The bark is rough and deeply corrugated, and the spreading branches form a bushy crown. It is grown all over northern China and Manchuria as an avenue, shade, and timber tree. The strong Chinese carts are constructed chiefly from its wood. It resists drought, extremes of temperature, and neglect remarkably well and thrives in the semiarid regions of the Great Plains as well as in the Southwest. (Adapted from *notes of Frank N. Meyer*, and from *Sargent, Plantae Wilsonianae*, vol. 3, p. 244.)

45026 and 45027. BASELLA RUBRA L. Basellaceæ.

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received July 26, 1917.

45026. An East Indian annual or biennial cultivated in the Tropics as a potherb, like spinach. It is branched, grows to about 6 feet high, and has fleshy, green leaves and small greenish or reddish flowers. The leaves are produced very freely during the summer, when they are eaten as greens. The seeds are sown early in March or April in a warm place and in May or June are transplanted to the foot of a wall with a southern exposure. The plants should be supported by a trellis. The seeds are said to retain their viability for about five years. (Adapted from *Vilmorin-Andrieux & Co., Plantes Potageres*, p. 32.)

45027. Variety *cordifolia*. This is the largest variety of this species and the most cultivated, being used to cover trellises and dwellings. It is the most succulent variety also and is more used as a potherb than the others. (Adapted from *Hooker, Flora of British India*, vol. 5, p. 21.)

45028. SECURIDACA LAMARCKII Griseb. Polygalaceæ.

Easter blossom.

From St. Vincent, British West Indies. Presented by the agricultural superintendent, Botanic Gardens, at the request of Mr. A. G. Howell, Imperial Department of Agriculture. Received July 27, 1917.

A climbing woody vine with oval leaves up to 2 inches in length and scattered, lax, simple racemes of rosy scentless flowers, each about half an inch long. The fruit is a samara, somewhat similar to the samara of the maple tree. This vine is a native of Jamaica and St. Vincent and probably other islands of the British West Indies. (Adapted from *Grisebach, Flora of the British West Indian Islands*, p. 30.)

45029 to 45031. SACCHARUM OFFICINARUM L. Poaceæ.

Sugar cane.

From St. Croix, Virgin Islands. Cuttings presented by Dr. Longfield Smith, Agricultural Experiment Station, Christiansted. Received July 31, 1917.

Introduced for the Sugar Experiment Station, New Orleans, La.

45029. *Santa Cruz 14/7.*

45031. *Santa Cruz 13/13.*

45030. *Santa Cruz 14/47.*

45032. PHYTELEPHAS MACROCARPA Ruiz and Pav. Phœnicaceæ.**Ivory-nut palm.**

From Panama, Canal Zone. Presented by Mr. B. H. A. Groth, National School of Agriculture. Received July 28, 1917.

An arborescent palm with a thick, rough, creeping trunk, from the under surface of which roots are given off. The leaves which crown the trunk closely resemble those of the coconut palm in size, shape, and disposition. The flowers emit a powerful perfume, especially the large, white, pistillate flowers, which are, however, few in number. The ripe fruit consists of three portions—an exterior part which is dark, rough, and woody; a middle part, which consists of a yellowish, oily, sweet-tasting pulp; and an inner part, the seed, which is the vegetable ivory of commerce. These fruits grow on the trunk just above the bases of the leaves in bunches of six or seven and are called *cabeza de negro* by the natives of Colombia. The palm is a native of South America and Central America. The albumen of the seed is the so-called vegetable ivory, and this becomes whiter and more opaque on exposure to the air. (Adapted from *West Indian Bulletin*, vol. 9, p. 279, 1908.)

45033. JUGLANS PORTORICENSIS Dode. Juglandaceæ.**Porto Rican walnut.**

From Mayaguez, Porto Rico. Seeds presented by Dr. D. W. May, agronomist in charge, Agricultural Experiment Station. Received July 28, 1917.

A Porto Rican walnut tree 20 to 25 meters (65 to 80 feet) in height, with slightly hairy, compound leaves composed of 7 to 13 pairs of broadly oval, pointed leaflets. The round brownish red fruit, 3 to 5 centimeters (1 to 2 inches) long, incloses a wrinkled subconical nut. (Adapted from *Bulletin Société Dendrologique de France*, No. 13, p. 201, 1909.)

45034 to 45036. Poaceæ.

From Port au Prince, Haiti. Presented by Capt. John Marston, civil administrator. Received July 28, 1917.

45034 and 45035. ORYZA SATIVA L.**Rice.**

Haitian Rangoon rice. Grown at the Thor Experiment Station, Port au Prince.

45034. Small dark-seeded form.

45035. Large light-seeded form.

45036. ZEA MAYS L.**Corn.**

"Selected maize. A prolific bearer throughout Haiti—in the mountains, along the beach, and in the valleys and lowlands." (*Marston*.)

45037 to 45040.

From Burringbar, New South Wales, Australia. Presented by Mr. B. Harrison. Received July 30, 1917.

45037. ANDROPOGON ERIANTHOIDES F. Muell. Poaceæ.**Grass.**

"*Satintop*." An erect glaucous grass, 2 or 3 feet high, with rather narrow leaves and usually three or four sessile, erect spikes about 3 inches in length. It is a native of New South Wales and Queensland, where it is considered a very superior grass for forage purposes. It produces a heavy crop of rich, succulent foliage, spreads from the roots, and also seeds freely. (Adapted from *Bentham, Flora Australiensis*,

45037 to 45040—Continued.

vol. 7, p. 529, and from Maiden, Useful Native Plants of Australia, p. 73.)

45038. ANDROPOGON INTERMEDIUS R. Br. Poaceæ.

Grass.

An erect grass with rather narrow leaves and slender spikes, growing in large clumps, 2 feet or more in height. It is a native of Australia, where it is used as a forage grass. It is readily propagated from the roots. (Adapted from *Bentham, Flora Australiensis, p. 531, and from Agricultural Gazette, New South Wales, May 2, 1914.*)

45039. CHAETOCHELOA BARBATA (Lam.) Hitchc. and Chase. Poaceæ.

Grass.

A weak-stemmed annual grass which grows freely in open and waste ground from the West Indies to Brazil. It is a native of tropical Asia, and in Australia has been recommended as a forage grass. (Adapted from *Hitchcock and Chase, Grasses of the West Indies, and from letter of B. Harrison.*)

45040. PANICUM DECOMPOSITUM R. Br. Poaceæ.

Grass.

A tall, coarse, succulent, semiaquatic grass, cultivated in many parts of Australia as a forage crop. It produces an abundance of forage and is greatly relished by stock. It has yielded under cultivation as much as 3 tons of hay per acre. The seeds are produced in December and January. (Adapted from *Maiden, Useful Native Plants of Australia, p. 97.*)

45041 to 45043. HORDEUM VULGARE COELESTE L. Poaceæ.

Barley.

From Nanking, China. Presented by Mr. J. H. Reisner, College of Agriculture and Forestry, University of Nanking. Received July 30, 1917.

"Hull-less barley, collected in Chinese fields, June, 1917. These hull-less barleys mature earlier than the hulled varieties and are harvested early in May." (*Reisner.*)

45041. Light.

45043. Dark.

45042. Medium.

45044. RUBUS RACEMOSUS Roxb. Rosaceæ.

Blackberry.

From Kingston, Jamaica, British West Indies. Seeds presented by Mr. William Harris, Hope Gardens, Department of Agriculture. Received July 31, 1917.

A rambling bush, with the branchlets, petioles, and inflorescence covered with glandular hairs and with straight or hooked prickles on the stems. The leaves are composed of five to seven oval or roundish dentate leaflets, and the large red flowers are in axillary or terminal corymbs. The plant is a native of the Nilgiri Hills, India. (Adapted from *Hooker, Flora of British India, vol. 2, p. 340.*)

45045. BUTIA ERIOSPATHA (Mart.) Becc. Phœnicaceæ.

Palm.

(*Cocos eriospatha* Mart.)

From Gotha, Fla. Fruits presented by Mr. H. Nehrling. Received August 1, 1917.

"A most beautiful glaucous pinnate-leaved palm with slightly violet-colored leaf stems. The seeds were received under the name of *Cocos blumenavia* from

Blumenau, in Brazil, in 1892. This palm bore its first bunches of fruit four years ago. The large cream-colored flower cluster is inclosed in a spathe densely covered with a felty, brown, soft wool. The fruits have no odor. They are the size of a very large cherry or small plum, are yellow, and are covered with deep-brown spots. The fruit is the most delicious of all the hardy Cocos and reminds one of the flavor of a very good, sweet plum. The palm grows on high, dry pineland and is hardier than the orange." (*Nehrling*.)

Cocos blumenaria Hort., is referred by Beccari, *L'Agricoltura Coloniale*, vol. 10, p. 612, to his new genus *Butia*, as either *Butia eriospatha* or *B. capitata*.

45046. PYRUS USSURIENSIS Maxim. Malaceæ. Pear.

From Charles City, Iowa. Cuttings presented by Mr. Charles G. Patten.
Received August 4, 1917.

The origin of these cuttings is given in the following account: In Grundy Center, Iowa, there is a pear tree which endured the extremely cold winters of 1883 to 1885. This tree, now owned by Mr. O. A. Bardhall, a tailor, was imported from China as a sand pear by John S. Collins & Sons, of New Jersey, and was supposed by them to bear fruit nearly the size of *Flemish Beauty*, but only of cooking quality. The extreme hardness of the tree appealed to Mr. Charles G. Patten, of Charles City, Iowa, who planted one in his orchard, and the following year planted two more. The second year after that the tree bore fruit, but on account of its early blooming and consequent lack of pollination bore only a scanty number of small, green-colored, hard pears. (Adapted from *Charles G. Patten, Report of the Iowa State Horticultural Society for 1912, p. 162.*)

45047. MELICocca BIJUGA L. Sapindaceæ.

From Caracas, Venezuela. Presented by Mr. Henry Pittier, Agricultural Experiment Station. Received August 6, 1917.

"A small or middle-sized tree with thick foliage. The round or oval fruits are about the size of a pigeon's egg and are borne in racemes hanging from the ends of the branchlets. Each fruit has a single seed, with a layer of sweet, jellylike pulp between the seed and the green pericarp. The roasted seeds are said to be of fine flavor. The tree grows from sea level to 1,200 meters (3,900 feet) and should thrive in Florida." (*Pittier*.)

45048. DOVYALIS TRISTIS (Sond.) Warb. Flacourtiaceæ.

From Pretoria, Transvaal, South Africa. Seeds presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture, Union of South Africa. Received August 6, 1917.

"A tree which occurs on the kopjes (low hills) around Pretoria and which bears an abundance of small fruits. These fruits make a delicious jelly." (*Evans*.)

Usually an unarmed shrub or small tree, 10 to 15 feet high, with leathery, obovate, glabrous leaves with shining upper surfaces. The inconspicuous flowers appear in November, followed in January by the roundish, yellow, pulpy fruits, which are about half an inch long. The fruits are highly flavored and are eaten raw or made into jelly. (Adapted from *Sim, Forests and Forest Flora of Cape Colony, p. 130.*)

45049 to 45064. PRUNUS spp. Amygdalaceæ.**Japanese flowering cherry.**

Grown at the Plant Introduction Field Station, Rockville, Md., from scions presented by Mr. David Fairchild from his place, "In the Woods," Chevy Chase, Md. The collection came originally from the Yokohama Nursery Co., of Japan, in 1905. Numbered August 27, 1917. Quoted notes by Mr. Fairchild.

If anyone would grow these lovely flowering trees, he should be prepared to protect them from the San Jose scale by spraying them every spring before they flower (February or March) with the lime-sulphur solution.

45049 to 45052. PRUNUS SERRULATA Lindl.

45049. "Variety *Naden*. One of the loveliest of the very double, delicate pink varieties. Late flowering, about May 1. Flowers hang in clusters of two to five on long stems. Buds at first deep pink and truncate as though their tips had been cut off; they expand slowly and form wonderful, double, very large ($1\frac{1}{2}$ inches), flat flowers with petals of a delicate pink, deeper colored at the margins. Flowers in rifts. Tree extremely Japanesque. Fairly vigorous. One of the loveliest for small-lawn planting."

45050. "Variety *Hosokawa*. A very beautiful double-flowered form with truncate deep-pink buds and flat light-pink flowers in clusters of two to three on rather long pendent flower stalks. Very floriferous. Resembles closely the *Naden* [S. P. I. No. 45049], but the tree appears to be less vigorous. Late bloomer (May 1 in Maryland)."

45051. "Variety *Ôjôchin*. Flowers very slightly double, large ($1\frac{1}{2}$ inches), almost pure white, on short upright stems; slightly fragrant, late flowering (May in Maryland). Though the flowers are not borne in masses and the tree is not, therefore, as showy as trees of other varieties, the unusual size and beauty of the individual flowers, which resemble single roses, make it attractive for dooryards. Foliage bronze and golden in autumn. Tree not very vigorous."

45052. "Variety *Daisen*. Single, white, medium-sized flowers (1 inch) with distinct cherry fragrance. Midseason (Apr. 20 to May 1 in Maryland). The flowers are scattered most attractively through the tree, but the green leaves come out early, mixing with the flowers and preventing the tree from being very striking. Not one of the showy varieties, but an unusually vigorous grower that produces many seeds. Foliage in autumn golden yellow.

45053. PRUNUS SIEBOLDII (Carr.) Wittmack.

"Variety *Mikuruma-gayeshi*. Early flowering (Apr. 10 to 20 in Maryland), very light pink, semidouble, medium large flowers on long upright stems. Very floriferous. Tree vigorous and because of earliness of flowering a very desirable variety, though the individual flowers perhaps are not so lovely as very double late-blooming sorts.

45054 to 45062. PRUNUS SERRULATA Lindl.

45054. "Variety *Amenogawa*. Translated meaning, 'milky way.' One of the most striking varieties because of its upright or fastigiate growth. Peculiarly suited for architectural uses. Medium size.

45049 to 45064—Continued.

- white to very light pink flowers on short stems borne in great masses, concealing the branches. As seen from below, the tree suggests the characteristic name. Tree not very vigorous."
45055. "Variety *Ussussumi*. Very late variety (May 1 in Maryland), with hanging, large, very double flowers borne in clusters. The petals are tinged with light brown, giving them a strange, though not unattractive appearance. The leaves, coming out at the same time as the flowers, are dark bronze. In autumn they turn to claret red after a sharp frost. Tree a fairly rapid grower, but trunk inclined to be tender. Very floriferous."
45056. "Variety *Murasaki*. Deep pink, semidouble flowers (1 inch) on short upright stems; very free flowering. While perhaps not quite so delicate as some of the very double light-pink varieties, this makes a striking show from a distance and for park use can be highly recommended. Tree low-heading, vigorous, flowering in midseason (Apr. 20 to May 1 in Maryland). Young foliage bronze color; in autumn golden yellow."
45057. "Variety *Chōshu*. Very large deep-pink double flowers (1½ inches), borne on long pendent stems in clusters of two to five. Flower buds very deep pink. Late flowering (May 1 in Maryland). Young foliage a beautiful bronze; in autumn gold and crimson. Tree not very vigorous or floriferous."
45058. "Undetermined variety. Single, medium sized (1 inch across), white flowers borne very profusely in short upright clusters; not fragrant. Midseason (Apr. 10 to 20). Tree a vigorous grower; very Japanesque. Trunk not often diseased. On fairly fertile soil forms a tree 20 feet tall in 10 years. Named, evidently incorrectly, *Jobeni*."
45059. "Variety *Asagi*. A rare variety with pale-green flowers, which when they first open have a strange but very attractive appearance; later the centers of the flowers turn red and they are then less attractive. Not showy at a distance, but delicately beautiful for use in house decoration. Tree rather delicate; late bloomer."
45060. "Variety *Wasemiyako*. Large, semidouble, almost pure white flowers, upright on short stems, very attractively arranged on the branches. Midseason (Apr. 20 in Maryland). Tree only fairly vigorous. Suitable for lawn planting, and showy from a distance."
45061. "Variety *Miyakobeni*. Midseason variety (Apr. 10 to 20 in Maryland) with semidouble flowers, 1¼ inches across, borne on short upright stems in clusters of two or three. Buds pointed; quite pink. Flowers pale pink when young, turning reddish with age; slightly fragrant. Tree very floriferous; a vigorous grower, attaining 20 feet in 10 years."
45062. "Variety *Toranowo*. Large (1½ inches) extremely double flowers; deep pink when in bud, becoming delicate light pink in full bloom; hanging on long stems in clusters of two to five. Buds flat as though tips were cut off. Not so free flowering as *Naden* [S. P. I. No. 45049], but with deeper pink flowers; prominent green pistils. Tree fairly vigorous."

45049 to 45064—Continued.

45063 and 45064. *PRUNUS MUME* Sieb. and Zucc. Japanese apricot.

45063. "Variety *Tsukasa-shibori*. Semidouble, very light pink flowered variety, blooming in Maryland in the middle of April. Though spoken of as the 'flowering plum of Japan,' the 'mume' of Japan is really an apricot. The delicate fragrance of the flowers, the extremely picturesque habit of growth of the tree, and its extreme earliness (April in Maryland), make it worthy of extensive trial. It rarely sets fruit in America. Fruits sour, but delicious when pickled."

45064. "Variety *Oteno*. The 'Japanese flowering plum' is really an apricot. The picturesque form of the tree and its extremely beautiful and fragrant blossoms, combined with the fact that it is one of the earliest of all trees to bloom, often so early that the snow falls on it, have made it the favorite of Japanese poets. It is hardy in the Atlantic Coast States, and even though its blossoms often are killed by frost it is worthy of extensive trial. Its fruits are sour and remind one of the American wild plum in flavor. When pickled they form part of the army ration of Japan."

45065. COLOCASIA sp. Araceæ.**Taro.**

Grown for botanical study at the Plant Introduction Field Station, Brooksville, Fla., from tubers received in March, 1912, from Mr. J. St. Clair White, Gough, S. C.

"This is the 'yellow tanyah,' grown in small patches by some of the planters along the Cooper River and in the coast region of South Carolina. It derives its name from the yellowish color of the cooked corms and cormels, as contrasted with the much darker, somewhat bluish color of the 'blue tanyah,' the only other variety commonly grown in the same region. The yellow tanyah plant is of slightly smaller growth than the so-called blue variety. The corms and cormels are also smaller, and the buds of these are white, while those of the blue tanyah are pink. The corms of the yellow tanyah are extremely acrid and require two hours' boiling in preparation for the table. The flavor is pronounced and is richer than that of the blue tanyah. The yellow tanyah strongly resembles the *Igname branca*, or white taro [S. P. I. No. 19996], of Madeira." (R. A. Young.)

For an illustration of this taro, see Plate III.

45066 to 45069.

From Puerto Bertoni, Paraguay. Presented by Dr. Moises S. Bertoni. Received August 1, 1917. Quoted notes by Dr. Bertoni.

45066. *ARECASTRUM ROMANZOFFIANUM AUSTRALE* (Mart.) Becc. Phœnicaceæ. **Pindo palm.**

"(May, 1917.) *Pindó-poi*. A very tall palm with a habit like a slender reversed pyramid. In the forests of eastern Paraguay it frequently becomes 20 meters or more in height, equaling the tallest trees of the fine forest which covers a great part of this region. The mature specimens of this palm furnish a very hard and resistant wood for 6 to 12 meters from the base of the trunk."

45067 and 45068. *EUGENIA UNIFLORA* L. Myrtaceæ. **Pitanga.**

45067. "(June, 1917.) *Añangapirih-apuá*. A fruit tree 3 to 8 meters high. It prefers to grow in wooded lowlands drained by

45066 to 45069—Continued.

arroyo basins or on rocky slopes; in such situations the little tree becomes tall, with few branches and short twigs. In open places and in good soil it becomes less tall and more branched. The fruit is quite similar in appearance and taste to the pitanga of Brazil, but the tree is more resistant to cold, for it grows in localities where the minimum temperature reaches -5° or -6° C."

45068. "(June, 1917.) *Añangapirih* variety. A variety of the preceding; equally edible."

45069. *TRICHILIA CATIGUA* JUSS. Meliaceæ.

Katiguá.

"(June, 1917.) A small ornamental tree found throughout the forests of Paraguay. The bark, according to our analyses, contains 20.5 per cent of crude tannin and a large proportion of coloring matter for dyeing. The leather thus tanned is of red color, which is much esteemed."

45070 to 45072. VITIS VINIFERA L. Vitaceæ.

Grape.

From Melbourne, Australia. Cuttings presented by Mr. François de Castella, Government viticulturist, Department of Agriculture, Victoria, Australia. Received August 6, 1917. Quoted notes by Mr. Castella.

45070. "*Red May.* A seedling of *Bicane* or *Raisin des Dames* which originated in the Bendigo District of this State (Victoria). It is a fine grape, of good flavor, and carries very well considering its juiciness."

45071. "*Doradillo.* The well-known grape of southern Spain. It is a very heavy bearer and is being much planted in this State (Victoria) for brandy distillation."

45072. "*King George V.* A *Gros Colman* sport, which is inferior to that variety, for the bunches are very badly filled although the berry is larger."

45073. BUTIA CAPITATA ODORATA (Barb.-Rodr.) Becc. Phœnicaceæ. Palm.

(*Cocos odorata* Barb.-Rodr.)

From Gotha, Fla. Presented by Mr. H. Nehrling. Received July 27, 1917.

"The partially bright-red fruit, larger than those of *Cocos australis*, comes from a taller, open tree. There are not many fruits in a bunch, and I have not tasted them, but they appear to be good. This tree was also grown from seed received from Blumenau, Brazil, in 1890, which was collected by Gaertner from wild trees growing in stony or rather dry soil. These *Cocos* palms (*Cocos australis*, *C. gaertneri*, *C. datil*, *C. campestris*, *C. criospatha*, and several others) all have rather hard bluish green leaves and thrive to perfection on our high, dry Florida pineland. I think they will grow all along the South Atlantic and Gulf coast. They all are fine ornamentals in any garden." (Nehrling.)

45074. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino. [Amygdalaceæ. Sargent's cherry.

(*P. sargentii* Rehder.)

From Jamaica Plain, Mass. Seeds presented by Dr. C. S. Sargent, Arnold Arboretum. Received August 3, 1917.

A handsome large tree, of great ornamental value; hardy as far north as Massachusetts and bearing profusely, in early spring, handsome rose-pink single flowers.

45075 and 45076. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosa-
(P. juliflora DC.) [saceæ. **Algaroba.**

From Oran, Province of Salta, Argentina. Presented by Mr. S. W. Damon.
 Received August 10, 1917.

Introduced for the work of the Office of Forage-Crop Investigations.

45075. White.

45076. Black.

45077. ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

From Jujuy, Argentina. Seeds presented by Mr. S. W. Damon. Received
 August 11, 1917.

Reported to be frost resistant, having withstood 9 or 10 degrees C. of frost.
 Said to be a fine anona, weighing up to 2 kilograms.

45078 to 45081.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer
 of the Bureau of Plant Industry. Received August 8, 1917. Quoted
 notes by Mr. Popenoe.

45078. PERSEA AMERICANA Mill. Lauraceæ.
(P. gratissima Gaertn. f.)

Avocado.

"(No. 171. Avocado 31. From Mazatenango, Department of Suchitepequez. Altitude 1,148 feet.) *Nimah*. Bud wood of a variety obtained especially for trial in Florida, since it comes from the hot lowlands and may be better adapted to the conditions which obtain in extreme southern Florida than are those from the Guatemalan highlands.

"This is a pear-shaped fruit, sometimes curved, with a well-defined neck. It is of medium size, weighing about 11 or 12 ounces, deep green in color, with a rough surface and a thick, tough skin. The flesh is deep yellow in color, free from fiber, and of rich flavor. The seed is medium sized. On the whole the variety is satisfactory in point of flavor and quality, yet it is not good enough to be included in the Guatemalan collection on these characteristics alone."

45079. CHAMAEDOREA sp. Phœnicaceæ.

Pacayito palm.

"(No. 168a. July 22, 1917.) Seeds of a dwarf palm which grows in the forests of the Department of Baja Vera Paz at altitudes of 4,000 to 5,000 feet.

"The Indians term this plant *ko-kiip*, which means 'small pacaya,' but as this name is applied to several other dwarf palms it does not possess much significance.

"On the mountain sides, under dense forest, this dwarf palm grows abundantly, apparently thriving in the deepest shade and in soils which are nothing but decaying vegetation. It has a slender stem, less than half an inch thick, which at times becomes half trailing, as it grows to 4 or 5 feet in length and is not strong enough to support the weight of the foliage. Probably if the plant received more light than it does in the dense forest it would remain erect and develop a stiffer trunk.

"In the young plants the leaves are once divided, resembling a fishtail in outline. They are about 6 inches in length and breadth and of light-green color. As the plant becomes older, the foliage becomes pinnate, with about three pairs of pinnæ, the terminal pair larger than the rest and joined together for some distance along the rachis.

45078 to 45081—Continued.

"This is an interesting and decorative small palm, which may be of value for house decoration in the United States. Since it comes from a cool climate it may be adapted to open-air culture in California and Florida."

45080. *MIKANIA* sp. Asteraceæ.

"(No. 169a. July 22, 1917.) Seeds of an herbaceous climber from the borders of Lake Amatitlan (altitude 3,900 feet). It scrambles over bushes and low vegetation, producing freely its flame-scarlet flowers, about an inch in diameter. Apparently it is a very rapid grower, and when in full bloom it is quite showy. It seems worthy of a trial in the United States."

45081. *PERSEA SCHIEDEANA* Nees. Lauraceæ.

Coyó.

"(No. 170a. July 23, 1917.) Seeds of a very large variety of coyó from the town of El Rancho, in eastern Guatemala. The fruits from which these seeds were taken weighed from 1 to 2 pounds each. They were bright green in color, with very thick skins and milky white to brownish white flesh of very rich, nutty flavor. They contained a little fiber, but not as much as is commonly found in the coyó.

"These seeds should be planted in California and Florida and fruited as seedlings."

45082. *BELOU MARMELOS* (L.) Lyons. Rutaceæ.

Bel.

(*Aegle marmelos* Correa.)

From Burma. Seeds presented by Rev. William H. S. Hascall, Riverside, R. I. Received August 6, 1917.

"This small tree, which is closely related to the orange, is grown in India, Ceylon, and near-by regions for its fruits. These are not much eaten by Europeans, but are popular among the natives. They are considered to have medicinal value.

"In size and form the fruit resembles an orange, but it has a hard, woody shell, inclosing a yellowish, somewhat mucilaginous pulp. The flavor is sweet and somewhat mawkish to the unaccustomed palate.

"The bel tree has been planted in southern Florida and gives promise of succeeding there, although its growth is slow. It is probably too susceptible to frost for cultivation in California." (*Wilson Popenoe.*)

45083. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

From Bogota, Colombia. Seeds presented by Sr. Alvaro Uribe. Received August 11, 1917.

"One of the best Colombian avocados, which grows at elevations of from 3,000 to 4,500 feet at temperatures ranging from 20° to 26° C. and ripens in April. The fruits are well shaped and excellent in taste. The trees are very robust and require only sufficient moisture in the air." (*Uribe.*)

45084. *THEOBROMA CACAO* L. Sterculiaceæ.

Cacao.

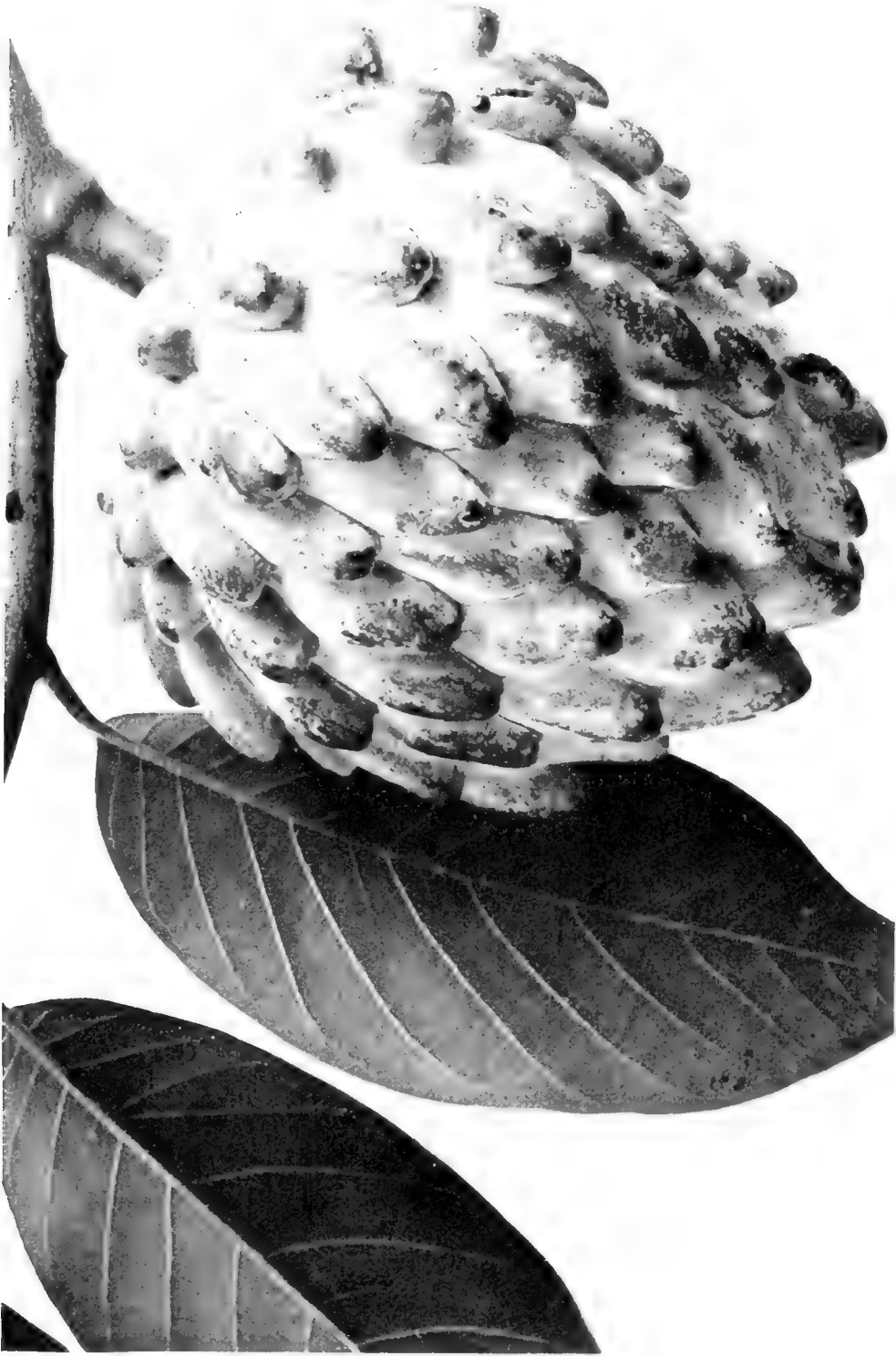
From Tjikeumeuh, Buitenzorg, Java. Presented by the manager of the experimental garden, Tjikeumeuh, at the request of Dr. P. J. S. Cramer, chief of the Plant Breeding Station, Buitenzorg, Java. Received August 13, 1917.

"*Djati Roenggo* hybrid."



THE YELLOW TANYAH, AN EDIBLE AROID FOR THE SOUTHEASTERN COAST REGION. (*COLOCASIA* SP., S. P. I. No. 45065.)

The yellow tanyah, *Colocasia* sp., of the coast regions of South Carolina and Georgia. This is the smaller and richer flavored of the two kinds of taro, or tanyah, grown for perhaps two centuries in that section. The corms and cormels are extremely acrid and require boiling for two hours to prepare them for the table. The flesh is white, but becomes slightly yellowish in cooking. The flavor is rich but pronounced, and a taste for it usually has to be acquired. This taro is of an undetermined species of *Colocasia* related to the dasheen, *C. esculenta* (L.) Schott, and to the euleas, or Egyptian taro, *C. antiquorum* Schott. (Photographed by R. A. Young at the Plant Introduction Field Station, Brooksville, Fla., October 16, 1912; P13878FS.)



A PROMISING HYBRID ANONA. (ANNONA CHERIMOLA × A. SQUAMOSA, S. P. I. No. 45181.)

The cherimoya has not fruited well in Florida, but the sugar-apple has. Since the cherimoya is much superior in flavor and shipping qualities to the sugar-apple it is believed that in this hybrid an advantageous combination of characters has been obtained and that a free-fruited type of hybrid is now available. Since it ripens in the winter like the cherimoya and is a delicious table fruit, it will be valuable for marketing in the tourist season. This hybrid was produced by Mr. Edward Simmonds, superintendent of the Plant Introduction Garden at Miami, Fla. (Photographed by Wilson Fopcoe, at Miami, Fla., August 4, 1914; P16124FS.)

45085 to 45087.

From Venezuela. Collected by Mr. H. M. Curran. Received August 14, 1917.

45085. BAUHINIA sp. Cæsalpiniaceæ.

"From Guanta, Venezuela. A small ornamental leguminous tree growing in dense stands on the crest of hills in the dry, rocky, coast regions around Guanta." (*Curran.*)

45086. SPONDIAS LUTEA L. Anacardiaceæ.**Yellow mombin.**

"From the Orinoco Delta, Venezuela. A tree 100 feet in height and 3 feet in diameter, yielding large yellow edible fruits. Common name *jobo*." (*Curran.*)

45087. MANICARIA SACCIFERA Gaertn. Phœnicaceæ.**Lemiche palm.**

"From the Orinoco Delta, Venezuela." (*Curran.*)

45088. TABEBUIA PENTAPHYLLA (L.) Hemsl. Bignoniaceæ.

From Puerto Cabello, Venezuela. Seeds presented by Mr. H. M. Curran. Received August 16, 1917.

"*Apamato*. A timber tree with a profusion of ornamental pink flowers." (*Curran.*)

45089. CITRUS NOBILIS DELICIOSA (Ten.) Swingle. Rutaceæ.**Tangerine.**

From Paranagua, Brazil. Cuttings purchased from Rev. R. E. Pettigrew. Received August 16, 1917.

"June 14, 1917. A tangerine orange. Known here as *Mimosa*, Assunguy River, about 30 miles north of Paranagua, State of Parana, Brazil." (*Pettigrew.*)

These cuttings were sent in response to a request for a Brazilian tangerine. Said to be "the finest tangerine that grows, as large as a grapefruit, and to retail in New York at 25 cents each."

45090. NEPHROLEPIS sp. Polypodiaceæ.**Fern.**

From Santiago de las Vegas, Cuba. Plants presented by Mr. H. A. Van Hermann, Agricultural Experiment Station. Received August 17, 1917.

"From the mountains of Cuba." (*Van Hermann.*)

Introduced for the monographic studies of *Nephrolepis* by Mr. R. C. Benedict, of the Brooklyn Botanic Garden.

45091. PERSEA AMERICANA Mill. Lauraceæ.**Avocado.**

(*P. gratissima* Gaertn. f.)

From the city of Guatemala, Guatemala. Seeds obtained by Mr. Wilson Popenoe, Agricultural Explorer of the Bureau of Plant Industry. Received August 23, 1917.

Ordinary varieties of avocados from the Guatemalan markets; sent in to be grown as stocks for the better varieties of Guatemalan avocados.

45092. LIVISTONA AUSTRALIS (R. Br.) Mart. Phœnicaceæ.**Australian fan palm.**

From Sydney, New South Wales. Seeds presented by Mr. W. J. Allen, Department of Agriculture, New South Wales, through Prof. S. C. Mason, of the Bureau of Plant Industry. Received August 23, 1917.

A tall, slender palm, 12 to 18 inches in diameter and 100 to 130 feet in height. Native to eastern Australia. The moderately hard wood is light colored and is occasionally used for light construction. The leaves are used for baskets; and the unexpanded fronds, after being dipped in boiling water, are dried and the fiber used in making hats resembling Panamas. The "cabbage," either raw or cooked, is highly esteemed by the natives. (Adapted from *Maiden, Useful Native Plants of Australia.*)

45093. KENNEDYA STERLINGII Lindl. Fabaceæ.

From Sydney, New South Wales. Presented by Mr. Hugh Dixon. Received August 24, 1917.

"Put seed into boiling water; when cool, sow. Plant out seedlings in sandy, peaty soil, well drained. Plants will not stand temperatures below frost point." (*Dixon.*)

A trailing or twining leguminous perennial with trifoliolate leaves, the leaflets orbicular, and with scarlet or pale vermilion flowers in one or three pairs. Native to Western Australia. (Adapted from *Botanical Register, plate 1845.*)

45094. HOHERIA POPULNEA A. Cunn. Malvaceæ.

From Avondale, Auckland, New Zealand. Seeds presented by Mr. H. R. Wright. Received August 24, 1917.

"Commonly called *lacebark*." (*Wright.*)

A handsome small tree or shrub, 10 to 30 feet in height, with very variable leaves and snow-white flowers produced in great profusion. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1496.*)

45095. ANACARDIUM OCCIDENTALE L. Anacardiaceæ. Cashew.

From Pernambuco, Brazil. Seeds presented by Mr. Arminius T. Haeberle, American consul. Received July 17, 1917.

A spreading tree, 30 to 40 feet in height, with large leathery leaves, bearing fruits consisting of a large, swollen, pear-shaped stalk, 2 to 4 inches long, and a small kidney-shaped nut, about an inch long, at the extremity. The stalk is juicy and acid and is used in preserves; the nut has an edible seed, which is roasted and served as a dessert. The tree is supposed to be a native of the West Indies and is propagated from seeds or by layering. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, p. 134.*)

45096. BERBERIS TRIFOLIOLATA Moric. Berberidaceæ. Barberry.

Plants grown at the Plant Introduction Field Station, Chico, Calif., from seeds originally received from Dr. David Griffiths, collected in Texas. Numbered August 31, 1917.

Evergreen shrub, 2 to 5 feet in height, often forming large thickets. The leaves compound, the three leaflets each three to five lobed and spiny. Berries red, aromatic, and acid, about as large as peas; ripening in May; much used for tarts, jellies, etc. (Adapted from *Contributions from the U. S. National Herbarium, vol. 2, p. 10.*)

45097 to 45100. AMYGDALUS COMMUNIS L. Amygdalaceæ.*(Prunus amygdalus Stokes.)***Almond.**

Selected varieties from seedlings of the Jordan almond, grown at the Plant Introduction Field Station, Chico, Calif., under S. P. I. No. 29515. Numbered for convenience in recording distribution.

45097. Tree No. 4.

45099. Tree No. 8.

45098. Tree No. 6.

45100. Tree No. 12.

45101 and 45102. CARISSA GRANDIFLORA (E. Mey.) DC. Apocynaceæ. Carissa.

Grown at the Plant Introduction Field Station, Miami, Fla., from seedlings of S. P. I. No. 32482. Numbered for convenience in recording distribution.

Selected varieties from seedlings of S. P. I. No. 32482, chosen because of their compact, bushy habit and their fruitfulness.

45103. CRESCENTIA ALATA H. B. K. Bignoniaceæ.

Grown at the Plant Introduction Field Station, Miami, Fla., from seed received from Mr. David Fairchild. Numbered for convenience in recording distribution.

A small ornamental tree, 10 to 20 feet high, with fascicled, trifoliolate leaves, closely allied to the calabash tree, *Crescentia cujete*. The brownish rank-scented flowers are borne singly upon the trunk; and the hard, globose fruits are about 2 inches in diameter. This tree is occasionally cultivated in the Philippines, where it was introduced from Mexico at an early date.

45104 and 45105.

Grown at the Plant Introduction Field Station, Miami, Fla., from seed brought in by Mr. Wilson Popenoe, from Cuba, in May, 1915. Numbered for convenience in recording distribution. Quoted notes by Mr. Popenoe.

45104. CHRYSOPHYLLUM CAINITO L. Sapotaceæ.**Caimito.**

"In Cuba, in Jamaica, and in several other tropical American countries the caimito is a common dooryard tree and its fruit is held in the same esteem as that of the sapote and the sapodilla. As an ornamental tree it is excellent, since it has deep-green glossy foliage, satiny brown beneath. The fruits are as large as apples and either green or purple in color. They have soft, melting flesh of sweet, agreeable flavor, suggesting the sapodilla. The tree is successful in Florida as far north as Palm Beach and should be more commonly planted in that State."

Purple variety.

45105. TAMARINDUS INDICA L. Cæsalpiniaceæ.**Tamarind.**

"A magnificent evergreen tree, widely cultivated in many tropical countries, preferring deep alluvial soil and abundant rainfall. The plump, slightly curved pod has a thin, brittle shell which incloses a soft brownish edible pulp containing sugar with acetic, tartaric, and citric acids. The fruit is widely used in India and Arabia as an article of diet and in Latin America as the chief constituent of a refreshing beverage."

45106. ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

From Brisbane, Australia. Seeds presented by Mr. Leslie Gordon Corrie.
Received August 23, 1917.

Seeds of a cherimoya growing wild in Queensland. To be grown as stocks for improved varieties.

45107 to 45109.

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received August 24, 1917. Quoted notes by Mr. Bircher.

45107. CHRYSOPHYLLUM MONOPYRENUM Swartz. Sapotaceæ. Satin leaf.

"A sapotaceous tree, up to 35 feet in height; native of the West Indies. The leaves are broad, green above, and covered with a rusty or white tomentum beneath. The small white flowers are clustered at the nodes or in the axils. The fruit is oblong, egg shaped, blackish, 1½ inches in length, usually 1-seeded, and is said to be insipid. At Matania el Saff the tree has changed its flowering time and now bears flowers in July instead of November, as formerly."

45108. EUGENIA PUNGENS Berg. Myrtaceæ. Guabiyú.

"A bush from South America, with pungent leaves and myrtlelike flowers. The black fruits, mostly in pairs, hang on slender peduncles; they are about an inch across and contain a sweet yellow flesh, inclosing one or two large green seeds. Although the fruit at present is insipid in flavor, it might be improved by continuous culture."

45109. EUGENIA SUPRA-AXILLARIS Spring. Myrtaceæ.

"A glossy leaved evergreen shrub from eastern Brazil, bearing clusters of white flowers. The black globose 1-seeded fruits are sessile, in clusters of 3 to 10, and are about the size of small cherries. The flesh surrounding the hard round seed has a sweet, very resinous taste, somewhat resembling juniper berries. Formerly it flowered in November, but it now blooms in July."

45110. JASMINUM ANGULARE Vahl. Oleaceæ. Jasmine.

From the Union of South Africa. Seeds presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture, Pretoria.
Received August 24, 1917.

"Collected in the eastern Province of the Cape Colony." (*Evans.*)

A climbing shrub with angled twigs and trifoliate leaves. The flowers are white and in three to seven flowered terminal or axillary cymes; the tube of the corolla is half an inch long. Native of South Africa.

45111 and 45112.

Seeds presented by Dr. David Griffiths, of the Bureau of Plant Industry.
Received July 24, 1917.

45111. BAILEYA MULTIRADIATA Harv. and Gray. Asteraceæ.

A very handsome composite, common on the mesas of the Southwest in early spring. The large heads of yellow flowers with showy, bright-yellow persistent rays, which are reflexed in age, are sometimes produced throughout the summer and until late in the fall. (Adapted from *Wootton and Standley, Flora of New Mexico, p. 718.*)

45111 and 45112—Continued.

45112. *ORTHOCARPUS PURPURASCENS* Benth. Scrophulariaceæ. **Purple escobita.**

A California annual about 1 foot high, with gaudy bracts and crimson or purplish corollas about 1 inch long. A common showy plant grown in the Sierra Nevada foothills, interior valleys, and coast ranges. (Adapted from *Jepson, Flora of Middle Western California*, p. 414.)

45113. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ. **Black-kernel barley.**

From Siokhe, Fukien, China. Presented by C. E. Gauss, American consul, Amoy, China, who obtained it from Rev. H. J. Voskuil. Received August 24, 1917.

"This appears to be the subvariety *coerulescens*." (*H. V. Harlan.*)

45114 to 45130. *COCOS NUCIFERA* L. Phœnicaceæ. **Coconut.**

From Ceylon. Presented by Mr. Alex. E. Rajapakse, Mudaliyar, Magdalene House, Negombo, at the request of the Ceylon Agricultural Society, Peradeniya. Received through Mr. Walter A. Leonard, American consul, Colombo, Ceylon, August 25, 1917.

A collection of the various forms of coconuts grown in Ceylon, secured for trial and comparative study in southern Florida.

45114. Greenish red. Large nuts.

45115. Brownish green. Very large size.

45116. Red. Medium size, rather long.

45117. Dark green. Large nuts.

45118. Deep red. Round, medium size.

45119. Green. Very long, medium size.

45120. Brown (light). Medium.

45121. Green. The ordinary variety.

45122. Light brown. Round, medium size.

45123. Green. Similar to S. P. I. No. 45121, but smaller.

45124. Light red. Similar to S. P. I. No. 45120, but smaller.

45125. Green. Perfectly round.

45126. Red. Small nut with a very thick kernel.

45127. Greenish red. Similar to S. P. I. No. 45125, but different in color.

45128. White King coconut.

45129. King coconut.

45130. (Maldivian.) Greenish.

45131. *NEPHELIUM BASSACENSE* Pierre. Sapindaceæ.

From Saigon, Cochin China. Seeds presented by the director, Department of Agriculture and Commerce. Received August 27, 1917.

A rather tall tree found in Cochin China, resembling *Nephelium lappaceum* in general appearance, but having straighter spines, red hairs on the lower surfaces of the leaves, etc. Its horticultural value is about the same as the rambutan (*N. lappaceum*). (Adapted from *Pierre, Flore Forestiere de la Cochinchine*, plate 319.)

45132 to 45137. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Honolulu, Hawaii. Cuttings presented by the experiment station of the Hawaiian Sugar-Planters' Association. Received August 23, 1917.

45132. *Demerara No. 1135.*

45133. "*Hawaiian No. 20.* Of a greenish yellow color, turning slightly red when exposed to the sun; internodes long and the rind hard; resists insects quite well and withstands winds better than many of the other varieties. It is a very popular cane in Hawaii to-day." (*Philippine Agricultural Review, July, 1914.*)

45134. "*Hawaiian No. 27.* Very large, erect, dark-green or yellow stalk; somewhat resembles *Lahaina*, but has shorter internodes; rind firm but not quite as hard as *Hawaiian No. 20*; stools well and gives a good tonnage; juice usually rich in sucrose." (*Philippine Agricultural Review, July, 1914.*)

45135. *Hawaiian No. 109.* A rose-colored seedling of the *Lahaina* variety, with hard rind, very slight rooting tendency, medium eyes and internodes. It is of good milling quality, of good hopper resistance, has eight canes in the stool, and no recumbency. The purity of the juice is 92.3 per cent and the sucrose percentage 17.9. (Adapted from *Circular No. 4, Report of the Experiment Station of the Hawaiian Sugar-Planters' Association, 1907, p. 12.*)

45136. *Hawaiian No. 146.* A yellow seedling of Barbados 306, with no recumbency, very fair hopper resistance, 10 canes in the stool, medium internodes, prominent eyes, hard rind, and no rotting tendency. It is of good milling quality, and the percentage of sucrose is 16.0 and of purity 90.4. The weight of the cane per foot is 8.5 ounces. (Adapted from *Circular No. 4, Report of the Experiment Station of the Hawaiian Sugar-Planters' Association, 1907, p. 14.*)

45137. "*Hawaiian No. 227.* An erect and tall cane; rind of a yellowish color and very hard; leaves stand up well and have a midrib which is slightly greenish but not conspicuous. Tonnage and purity results at the bureau experiment station the past year were very satisfactory." (*Philippine Agricultural Review, July, 1914.*)

45138 to 45140. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar-cane.**

From Honolulu, Hawaii. Seeds presented by the experiment station of the Hawaiian Sugar-Planters' Association. Received August 23, 1917.

45138. "*Lahaina.* Stalk of medium size, yellowish green in color, and somewhat recumbent on account of the extremely soft outer tissue; internodes very long. This cane was once the popular cane of Hawaii." (*Philippine Agricultural Review, July, 1914.*)

45139. *Demerara No. 1135.*

45140. *Hawaiian No. 109.* See S. P. I. No. 45135 for description.

45141. CARICA DODECAPHYLLA Vell. Papayaceæ. Papaya.

From Misiones, Argentina. Seeds presented by Mr. Gustavo Haack, Buenos Aires, through Mr. W. Henry Robertson, American consul general, Buenos Aires. Received August 27, 1917.

"*Yacarati-á*. A papaya, native to the Provinces of Misiones and Corrientes, Argentina. The trunk attains a circumference of 5 feet. The wood is much softer than that of the ordinary papaya; in fact, it may be said that there is no wood at all, simply bark. It is so easily worked that the peons with machete alone are able to make a canoe from the trunk in a very short time. When the tree becomes old the trunk often assumes a bottle-like shape, similar to that of the Palo borracho (*Chorisia insignis*). The fruit is large and is edible, either raw or cooked." (*Venturi and Lillo, Contribución al Conocimiento de los Árboles de la Argentina, p. 80*).

45142 to 45151. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(*T. vulgare* Vill.)

From Sydney, Australia. Presented by Mr. George Valder, undersecretary and director, Department of Agriculture. Received August 27, 1917.

45142. Bunyip. A very early wheat, grown for grain only.

45143. Comeback. An early wheat used both for grain and hay.

45144. Firbank. A very early wheat used for both grain and hay.

45145. Florence. "It was noticed that during the 1916-17 season, when a great deal of rust was experienced all over this State, the Florence proved more rust resistant than any of the other varieties sent." (*Valder.*)

45146. Marshall's No. 3. A late wheat recommended for both grain and hay.

45147. Rymer. A late variety of wheat recommended for both grain and hay.

45148. Sunset. A very early wheat.

45149. Warren. A midseason wheat recommended for both grain and hay.

45150. Yandilla King. A late wheat recommended for both grain and hay.

45151. Zealand. A late wheat grown for hay only.

45152 to 45155.

From Buitenzorg, Java. Seeds presented by the director of the Botanic Garden. Received August 6, 1917.

45152. GNETUM GNEMON L. Gnetaceæ.

An evergreen shrub or small tree extending from the Khasi Hills of India southward to Singapore and Java. The sessile orange-colored fruits are about an inch long and are eaten by the natives. The leaves are eaten boiled like spinach, and the bark is said to furnish a strong bast fiber. (Adapted from *Koorder and Valetton, Boomsoorten op Java, vol. 61, p. 349*.)

45153. PAVETTA INDICA L. Rubiaceæ. Pawatta.

A common and very variable bush or small tree found throughout India and Malaysia. It bears few-flowered clusters of fragrant white

45152 to 45155—Continued.

flowers. The root is used medicinally as a diuretic and purgative; it is bitter, but not of an unpleasant flavor. The fruit is said to be pickled and eaten in Madras, and the flowers are also used as a food by some of the hill tribes. (Adapted from Watt, *Dictionary of Economic Products of India*, vol. 6, p. 115.)

45154. PHAEOMERIA MAGNIFICA (Roscoe) Schum. Zinziberaceæ.
(*P. imperialis* Lindl.)

A perennial herb of large dimensions, reaching a height of 20 feet when planted in a rich soil. The leaves are 1 to 2 feet long, lanceolate or elliptic, the upper side green, the lower side reddish brown. Flowers numerous, with large, bright scarlet and green bracts crowded in a globose head. This species, originally from Mauritius, is sometimes grown as a hothouse ornamental. (Adapted from Bailey, *Standard Cyclopedia of Horticulture*, p. 1109.)

Received as *Elettaria speciosa*, but now considered as belonging to the genus *Phaeomeria*.

45155. PSYCHOTRIA BACTERIOPHILA Valet. Rubiaceæ.

A shrub, 2 to 3 meters (7 to 10 feet) high, native of the Comoro Islands, Madagascar. The elliptic or ovate-oblong, fleshy, dark-green leaves are short petioled and usually thickly covered with little tubercles formed by bacteria. The greenish white flowers are in numerous dense thyrses up to 3 inches long, and the fruits are subglobular drupes about one-quarter of an inch in diameter. (Adapted from Valeton, *Icones Bogorienses*, vol. 3, plate 271.)

45156. LITCHI CHINENSIS Sonner. Sapindaceæ. **Lychee.**
(*Nephelium litchi* Cambess.)

From Canton, China. Seeds presented by Mr. Ung Wah. Received August 23, 1917.

"Sunhing lychee."

45157. SAPINDUS OAHUENSIS Hillebr. Sapindaceæ. **Hawaiian soap tree.**

From Kealia lands, Waianae Mountains, Oahu, Hawaii. Presented by Mr. J. F. Rock, Honolulu. Received August 29, 1917.

A tree, 20 to 30 feet tall, remarkable in the genus for its simple leaves, which never show any indication of division. It is found in the valleys of the Kaala Range on the island of Oahu, where it is conspicuous from a distance because of its pale foliage. The flesh of the shiny fruits is full of saponin and forms a strong lather when beaten up in water. (Adapted from Hillebrand, *Flora of the Hawaiian Islands*, p. 85.)

45158 and 45159.

From Calcutta, India. Presented by Mr. C. C. Calder, Royal Botanic Garden. Received August 31, 1917.

45158. BLUMEA MYRIOCEPHALA DC. Asteraceæ.

"(From Kalighora, at 1,000 feet elevation, March 5, 1917.)"

A shrubby composite, with stems as thick as the forefinger and very stout branches; native of the Sikkim Himalayas east to Burma. Flower heads very numerous, one-fourth to one-third of an inch long, clustered in pyramidal panicles. (Adapted from Hooker, *Flora of British India*, vol. 3, p. 268.)

45158 and 45159—Continued.**45159.** PARAMIGNYA MONOPHYLLA Wight. Rutaceæ.

A stout, climbing, evergreen shrub, native of the Sikkim Himalayas and the mountains of Khasi at elevations of 2,000 to 5,000 feet. The wood is white, hard, and close grained. The root has a bitter saline taste, contains large crystals of oxalate of lime, and is used by the country people of Goa as an alterative tonic. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, p. 110.)

45160. BELOU MARMELOS (L.) Lyons. Rutaceæ. **Bel.**
(*Aegle marmelos* Correa.)

From Zafarwal, Punjab, India. Presented by Rev. H. S. Nesbit, American United Presbyterian Mission. Received September 7, 1917.

"Large specimens of bel fruit, about the largest I have ever seen, their average size being three times that commonly attained by this fruit." (*Nesbit*.)

For further description, see S. P. I. No. 45082.

45161. CLAUCENA LANSIUM (Lour.) Skeels. Rutaceæ. **Wampi.**
(*C. wampi* Oliver.)

From Canton, China. Seeds presented by Mr. Ung Wah. Received August 23, 1917.

A low, spineless tree, native of South China, where it is commonly grown for its fruits. Experiments are now being carried on with the *wampi* as a stock for citrus fruits.

45162 to 45166.

From Venezuela. Presented by Mr. H. M. Curran. Received August 23, 1917.

45162 and 45163. CITRULLUS VULGARIS Schrad. Cucurbitaceæ.**Watermelon.**

"From the Guajira Indian plantation, Isla de San Carlos, May 9, 1917."

45164. BAUHINIA sp. Cæsalpiniaceæ.

"From Quanta, June, 1917. A small leguminous tree with velvety leaves." (*Curran*.)

45165. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ. **Algaroba.**
(*P. juliflora* DC.)

"A leguminous tree, with small flowers in little heads or spikes. The pod is more or less thickened, and the leaves are composed of a large number of leaflets. This tree is a native of Mexico and the West Indies." (*W. Harris*, under S. P. I. No. 42643.)

45166. TABEBUIA PENTAPHYLLA (L.) Hemsl. Bignoniaceæ.

"From Puerto Cabello, June, 1917. *Apamato*. A timber tree with a profusion of ornamental pink flowers." (*Curran*.)

45167 to 45169.

From Paraguay. Presented by Dr. Moises S. Bertoni, Puerto Bertoni. Received September 6, 1917. Quoted notes by Dr. Bertoni.

45167. EUGENIA sp. Myrtaceæ.

"No. 7639. June, 1917. A shrub, 1 to 1½ meters high, from the meadows or savannahs of northeastern Paraguay at elevations of 170

45167 to 45169—Continued.

to 230 meters. The fruits are small, of an orange-yellow color, and the leaves are used in making a native medicine."

45168. *PASSIFLORA* sp. Passifloraceæ.

Granadilla.

"An ornamental vine from the fields and prairies of northeastern Paraguay at altitudes of 170 to 260 meters. The annual growth, which is 1 to 2 meters, is ashy white in color. May, 1917."

45169. *PSIDIUM* sp. Myrtaceæ.

Guava.

"*Araçá mbayá*. A shrub, 2 to 3 meters high, which grows among rocks and stones at altitudes of 170 to 230 meters. The fruit is sweet, nonacid, yellow when ripe, ovate, and 2 centimeters or more in length."

45170 to 45175.

From Soochow, China. Presented by Mr. N. Gist Gee, Soochow University. Received September 10, 1917.

45170. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon.

Chinese name *Ma ling kua* (*Mo. ling quo*), meaning horse-bell melon.

45171 to 45175. *CUCUMIS MELO* L. Cucurbitaceæ.

Muskmelon.

45171. Chinese name *Huang mi lü* (*Waung mih loo*), meaning yellow honey melon.

45172. Chinese name *P'in kuo kua* (*Bing quo quo*), meaning apple melon.

45173. Chinese name *Zeh lung quo*, meaning lined melon.

45174. Chinese name *Su hsiang kua* (*Soo shang quo*), meaning soochow sweet-smelling melon.

45175. Chinese name *Ch'ing p'i lü jou kua* (*Tsing bi loh nyoh quo*), meaning blue-skin green-flesh melon.

45176. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ.

Japanese apricot.

Grown at the Plant Introduction Field Station, Chico, Calif., from scions presented by Mr. David Fairchild, from his place, "In the Woods," Chevy Chase, Md. The collection was imported in 1905-6 through the Yokohama Nursery Co., of Japan. Numbered September 26, 1917.

"Variety *Ginfukurin*. A white-flowered variety of the so-called 'Japanese flowering plum tree.' These are among the most picturesque of all flowering trees and compose a large part of the illustrations on Japanese screens. Because of their extreme earliness and the fragrance of their blooms they deserve a place in our gardens. The fruits are sour, but have a delicious wild flavor about them. The flowers of many varieties are often caught by the frost, but the *Ginfukurin* is rather slow in coming into bloom and so is more likely to escape." (*Fairchild*.)

45177. TETRAZYGIA BICOLOR (Mill.) Cogn. Melastomaceæ.

(*Miconia bicolor* Triana.)

From Homestead, Fla. Seeds presented by Mr. Charles A. Mosier. Received September 13, 1917.

A low ornamental shrub, 5 to 10 feet high, remarkable for the white powdery down of the branchlets and the inflorescence. Leaves 3 to 5 inches long, entire; flowers white, in five to seven flowered cymes. Native to the West Indies. (Adapted from Grisebach, *Flora of the British West Indian Islands*, p. 254, as *Tetrazygia angustifolia argyrophylla*.)

45178. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino.
(*P. sargentii* Rehder.) [Amygdalaceæ. **Sargents' cherry.**

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received August 8, 1917.

"*Yamazakura* (mountain cherry)." A deciduous tree, 40 to 80 feet in height, with a trunk sometimes 3 feet in diameter and sharply serrate oval leaves, which are often reddish when young. The deep-pink flowers, from 1¼ to 1½ inches wide, are produced in short-stalked umbels of two to six flowers. The fruit is a small black cherry, one-third of an inch in diameter. This tree, a native of Japan, is probably the finest timber tree among the true cherries and is also remarkable for its beautiful flowers, which appear in April. The seeds germinate freely after lying dormant for a year. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 250.)

45179 and 45180.

From Dominica, British West Indies. Seeds presented by Mr. Joseph Jones, curator, Botanic Gardens. Received September 20, 1917.

45179. DURIO ZIBETHINUS Murray. Bombacaceæ. Durian.

"I believe Dominica is the only place in the western Tropics in which the durian tree has fruited. It first bore fruit in this island as far back as 1892." (*Jones.*)

"The durian grows on a large and lofty forest tree, somewhat resembling an elm in its general character, but with a more smooth and scaly bark. The fruit is round or slightly oval, about the size of a large coconut, of a green color, and covered all over with short, stout spines, the bases of which touch each other and are consequently somewhat hexagonal, while the points are very strong and sharp. It is so completely armed that if the stalk is broken off it is a difficult matter to lift one from the ground. The outer rind is so thick and tough that from whatever height it may fall it is never broken. From the base to the apex five very faint lines may be traced, over which the spines arch a little; these are the sutures of the carpels and show where the fruit may be divided with a heavy knife and a strong hand. The five cells are satiny white within and are each filled with an oval mass of cream-colored pulp, embedded in which are two or three seeds about the size of chestnuts. This pulp is the eatable part, and its consistence and flavor are indescribable. A rich butterlike custard highly flavored with almonds gives the best general idea of it, but intermingled with it come wafts of flavor that call to mind cream cheese, onion sauce, brown sherry, and other incongruities. Then, there is a rich glutinous smoothness in the pulp which nothing else possesses, but which adds to its delicacy. It is neither acid, nor sweet, nor juicy, yet one feels the want of none of these qualities, for it is perfect as it is. In fact, to eat durians is a new sensation, worth a voyage to the East to experience.

"When the fruit is ripe it falls off the tree, and the only way to eat durians in perfection is to get them as they fall; and the smell is then less overpowering. When ripe, it makes a very good vegetable if cooked, and it is also eaten by the Dyaks raw. In a good season large quantities are preserved salted in jars and bamboos and kept the year round, when it acquires a most disgusting odor to Europeans, but the Dyaks appreciate it highly as a relish with their rice. There are in the forest two varieties of wild durians with much smaller fruits, one of them orange

45179 and 45180—Continued.

colored inside; and these are probably the origin of the large and fine durians, which are never found wild. It would not, perhaps, be correct to say that the durian is the best of all fruits, because it can not supply the place of the subacid, juicy kinds, such as the orange, grape, mango, and mangosteen, whose refreshing and cooling qualities are so wholesome and grateful; but as producing a food of the most exquisite flavor it is unsurpassed. If I had to fix on two only, as representing the perfection of the two classes, I should certainly choose the durian and the orange as the king and queen of fruits." (*A. R. Wallace, The Malay Archipelago, p. 57.*)

45180. *GARCINIA MANGOSTANA* L. Clusiaceae.

Mangosteen.

A moderate-sized conical tree, with large leathery leaves, indigenous to Malaya. Its globular purplish brown fruit, about the size of an apple, is famed as one of the most delicious fruits of the Tropics. The delicate white juicy pulp surrounding and adhering to the seed is the part eaten. In striking contrast to it is the dense, thick, reddish rind, containing tannic acid and a dye. The tree is of very slow growth and does not usually come into bearing until about 9 or 10 years old. The essential conditions for it are a hot, moist climate and deep, rich, well-drained soil. Propagation is usually by seed, but may also be effected by "gootee" or layering. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, p. 164.*)

45181. *ANNONA CHERIMOLA* \times *SQUAMOSA*. Annonaceae. **Anona.**

Grown at the Plant Introduction Field Station, Miami, Fla., from garden No. 1803, tree C. Numbered September 25, 1917.

A hybrid between the cherimoya and the sugar-apple, produced by Mr. Edward Simmonds, of the Miami Field Station. It combines the unusual sweetness of the sugar-apple with the firmness and better shipping quality of the cherimoya. The trees show unusual vigor, having withstood the freeze of February, 1917, without being much damaged.

For an illustration of this anona, see Plate IV.

45182 to 45189.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer of the Bureau of Plant Industry. Received September 18, 1917. Quoted notes by Mr. Meyer.

45182 and 45183. *AMARANTHUS GANGETICUS* L. Amaranthaceae.

Amaranth.

45182. "(No. 2385a. Hankow, China. March 9, 1917.) A green-leaved amaranth, much cultivated in central China as a garden vegetable and eaten, when young, like spinach. The plant stands any amount of moist heat and can be sown at intervals throughout the summer. As the seedlings suffer a good deal at times from damping-off, the Chinese generally have the beds raised slightly above the surrounding land and then cover the surface with a sifted mixture of soot, ashes, and lime, which acts as a fertilizer as well as a fungicide. Chinese name *Pai han ts'ai*, meaning white amaranth vegetable. This *Han ts'ai* probably can be made a popular hot-weather vegetable throughout the southern sections of the United States."

45182 to 45189—Continued.

45183. "(No. 2386a. Ichang, Hupeh, China. March 24, 1917.) Mixed strains of *Han ts'ai*, a leaf vegetable for hot weather. It thrives best in well-drained, rich, light soil, but it is not very particular after once having started well. Mix seeds with sifted dry soil or sand and sow broadcast over a well-prepared bed; or sow between the poles on which Yard Long beans, etc., are raised."

45184. *IPOMOEA REPTANS* (L.) Poir. Convolvulaceæ.
(*I. aquatica* Forsk.)

"(No. 2387a. Wuchang, Hupeh, China. June 15, 1917.) The *Kuan ts'ai*, an annual herb, is cultivated by the Chinese as a hot-weather leaf vegetable and is prepared and eaten much like spinach. It is usually sown in rows at intervals during the spring and summer, to insure a continuous supply of greens. It thrives best in a rather wet, heavy soil and withstands being submerged (even for several days) without injury. The foliage resembles that of the sweet potato a good deal, but the roots are not fleshy. The young shoots are cut at intervals until the plants become exhausted. The white or pale rose-colored flowers appear in July and August, and shortly after flowering the plants set a good supply of seeds which are harvested for the next season's crop. Chinese name *Kuan ts'ai* (*Wöng tsai*), meaning jar vegetable or bamboo-leaf vegetable."

45185 to 45189. *BRASSICA PEKINENSIS* (Lour.) Gagn. Brassicaceæ.

Pai ts'ai.

45185. "(No. 2388a. Taianfu, Shantung, China. March 1, 1917.) A heavy winter *pai ts'ai* of fine quality, making firm much-elongated heads. Sown out in early August and transplanted in rich well-worked soil; it must not suffer from lack of water. Can be kept throughout the whole winter when stored in a cool dugout cellar; can also be held in good condition for several months when hung from the rafters of a cool storeroom or kept in an airy box."

45186. "(No. 2389a. Hankow, China. June 9, 1917.) A spring and autumn variety of Chinese cabbage of open growth; eaten boiled, like kale or mustard sprouts. Sown from early April to the end of May for spring consumption; for autumn use it is planted from the end of July to the end of August. Chinese name *Ya hao pai ts'ai*, meaning fresh-leaf cabbage."

45187. "(No. 2390a. Hankow, China. June 9, 1917.) An open-headed, very dark green variety of Chinese cabbage, sown out in September; persists throughout the winter in mild climates. Chinese name *Hci pai ts'ai*, meaning black *pai ts'ai*. Probably this should be cultivated as greens for winter in the South Atlantic and Gulf States."

45188. "(No. 2391a. Hankow, China. June 9, 1917.) An open-headed variety of Chinese cabbage, sown out in August and used as a fall and winter vegetable. Chinese name *Chiang kan pai ts'ai*, meaning oar-shaped *pai ts'ai*. This should probably be cultivated as greens for winter use in the South Atlantic and Gulf States."

45189. "(No. 2392a. Hankow, China. June 9, 1917.) A winter variety of *pai ts'ai* with solid heads; sown out in September. Chinese name *Nan ching pai ts'ai*. This should probably be cultivated as greens for winter use in the South Atlantic and Gulf States."

45190 to 45193.

Grown at the Plant Introduction Field Station, Chico, Calif. Numbered for convenience in distribution.

45190. ANISACANTHUS THURBERI (Torr.) A. Gray. Acanthaceæ.

Ornamental acanthaceous shrub, 2 to 4 feet high, with opposite, nearly lanceolate, thickish leaves and showy purplish red funnelform flowers, solitary or in leafy clusters in the axils. Native of Mexico, New Mexico, and Arizona. (Adapted from *Gray, Synoptical Flora of North America, vol. 2, part 1, 2d ed., p. 328.*)

45191. ARGEMONE PLATYCERAS Link and Otto. Papaveraceæ.

A rose-colored form of a showy flowered annual occasionally met with in gardens and found growing wild in the Southwestern States. A very spiny, glaucous-leaved, robust plant with large poppylike flowers.

45192. QUAMOCLIDION MULTIFLORUM Torr. Nyctaginaceæ.

A low diffusely branched perennial herb with smooth, ovate leaves and large purplish red flowers in clusters in a broad calyxlike involucre. The showy flowers have a thick, rather long tube spreading into a wide limb. Native from Colorado to western Texas and Arizona. (Adapted from *Wootton and Standley, Flora of New Mexico, p. 222.*)

45193. ZAUSCHNERIA CALIFORNICA Presl. Onagraceæ.

California fuchsia.

A half-hardy perennial with showy scarlet flowers resembling those of fuchsia but erect, not pendent. It is rather variable in form of leaves and in hardiness. Native of the southwestern United States.

45194. CUDRANIA TRICUSPIDATA (Carr.) Bureau. Moraceæ.

(*C. triloba* Hance.)

Grown at the Yarrow Plant Introduction Field Station, Rockville, Md., from seed received from the P. J. Berckmans Co., Augusta, Ga., November, 1916. Numbered for convenience in distribution.

A small deciduous tree, with slender, thorny branches and fleshy subglobose edible fruits. The P. J. Berckmans Co., in sending in the seed, reported that although the one tree left in their nursery at that time had fruited very well, it was rather difficult to get many fruits at one time, because the laborers seem very fond of them.

45195. MADHUCA INDICA Gmel. Sapotaceæ.

Mahwa.

(*Bassia latifolia* Roxb.)

From Seharunpur, India. Seeds presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens. Received September 24, 1917.

A large deciduous tree from northern India, cultivated widely in India for its cream-colored, fleshy, sweet corollas, which are dried for eating and for the manufacture of spirits. Introduced for trial in Florida.

45196. CROTON TIGLIUM L. Euphorbiaceæ. Croton-oil plant.

From St. Louis, Mo. Presented by Mr. G. H. Pring, Missouri Botanical Garden. Received September 24, 1917.

"A small ornamental tree with ovate leaves varying in color from metallic green to bronze and orange. The powerful purgative, croton oil, is obtained from the seeds by crushing." (*J. B. S. Norton.*)

45197. BRUNSFELSIA HOPEANA (Hook.) Benth. Solanaceæ.**Manacá.**

From Para, Brazil. Seeds presented by Senhor J. Simão da Costa. Received September 24, 1917.

A small spreading shrub, native to the States of Amazonas and Sao Paulo, Brazil. The leaves are alternate, narrow, and dark green; the spreading purple flowers are very fragrant. In Brazil the plant is used medicinally, the root serving as an antiseptic, a purgative, and a diuretic. By means of ether, a perfume is extracted from the flowers. (Adapted from *Curtis's Botanical Magazine*, vol. 55, pl. 2829, and from *Correa, Flora do Brazil*, p. 102.)

45198 to 45203.

From the Kachin Hills tract, Bhamo District, Upper Burma. Presented by E. Thompstone, Esq., Deputy Director of Agriculture, Northern Circle, Burma. Received September 24, 1917. Quoted notes by Mr. Thompstone.

45198. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ. Job's-tears.

"Kachin name, *Mung-Kawng*. Job's-tears is seldom cultivated; it occurs on the banks of streams and watercourses, and sporadically in the clearings of the hillmen. The seed, when ripe, is collected and utilized."

45199 to 45203. ZEA MAYS L. Poaceæ.**Corn.**

"The maize is scattered broadcast in the rainy weather, usually July, after the land has been plowed and harrowed. The crop is weeded once or twice, beyond which no care is given it."

45199. "Kachin name, *W'Lwe*; Burmese name, *Kauk-saw*."

45200. "Kachin name, *W'Hpraw*; Burmese name, *Pyauung-pyu*."

45201. "Kachin name, *Hkainu*."

45202. "Kachin name, *U-Pan*; Burmese name, *Ah-lat*."

45203. "Kachin name, *W'Hti*; Burmese name, *Kauk-kyi*."

45204 to 45214.

From Leverville, Belgian Kongo. Presented by Père Hyacinthe Vanderyst, Jardin Agrostologique, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received September 24, 1917. Quoted notes by Père Vanderyst.

45204 and 45205. ANDROPOGON FINITIMUS Hochst. Poaceæ.**Grass.**

45204. "(*Andropogon lugugaensis* VDR. variety *levervillensis* VDR. Jardin Agrostologique, Leverville, July, 1917.) A good forage grass."

45205. "(Jardin Agrostologique, Leverville, July, 1917.) A good forage grass."

Received as *Andropogon familiaris* variety *levervillensis* VDR.

45206. ANTHEPHORA CRISTATA (Doell) Hack. Poaceæ.**Grass.**

"(Jardin Agrostologique, Leverville.) A good pasture, when young, for small animals."

45207. CENCHRUS BARBATUS Schumach. Poaceæ.**Grass.**

"(Jardin Agrostologique, Leverville, July, 1917.) Unsuitable for pasture on account of its thorny fruits."

45204 to 45214—Continued.

45208. *CHLORIS BREVISETA* Benth. Poaceæ.

Grass.

"(Jardin Agrostologique, Leverville, July, 1917.)" A West African grass from the Cape Coast region, resembling *Chloris compressa* in the structure of its flowers. The new growth is said, in Belgian Kongo, to form an excellent pasture for small animals.

Rhodes grass, *C. gayana*, also from western tropical Africa, has succeeded so well in the Southern States that this grass also should receive a thorough trial.

45209. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.) Hitchc. Poaceæ.

Tabucki grass.

"(Variety *astoloniferus* VDR. Jardin Agrostologique, Leverville, July 1917.)"

45210. *PANICUM DIAGONALE* Nees. Poaceæ.

Grass.

"(Jardin Agrostologique, Leverville.) Useful as pasture in the young state."

A perennial tufted grass reaching a height of more than 3 feet. •Native to Central and East Africa.

45211. *PENNISETUM BENTHAMII* Steud. Poaceæ.

Grass.

"(Jardin Agrostologique, Leverville, July, 1917.) A good forage species for cattle."

45212. *PENNISETUM SETOSUM* (Swartz) L. Rich. Poaceæ.

Grass.

"(Jardin Agrostologique, Leverville, July, 1917.) Pasture in the young state for small animals."

A tall, leafy, branching perennial, erect or ascending from a geniculate base, the long, flat blades pubescent or scabrous, the purplish spikes 10 to 15 centimeters (4 to 6 inches) long. On grassy slopes and in open woods, Mexico and West Indies to South America, and also in tropical Asia and Africa. (Adapted from *Hitchcock and Chase, Grasses of the West Indies*, p. 354.)

45213. *PEROTIS INDICA* (L.) Kuntze. Poaceæ.

Grass.

(*P. latifolia* Ait.)

"(Jardin Agrostologique, Leverville.)" An annual or subperennial grass, with stout and branching leafy culms and usually short, broad, rigid, ciliate blades, common throughout tropical Africa and Asia. It grows to a height of 10 inches, and is said in the Belgian Kongo to be a good pasture in the young state for small animals.

45214. *SPOROBOLUS MOLLERI* Hack. Poaceæ.

Grass.

"(Cultivated in the Jardin Agrostologique, Leverville, July 8, 1917.) Value as yet undetermined."

45215. *PRUNUS CONRADINAE* Koehne. Amygdalaceæ.

Cherry.

Grown at the Plant Introduction Field Station, Rockville, Md., from scions presented by Mr. David Fairchild from his place, "In the Woods," Chevy Chase, Md. Introduced originally by the Arnold Arboretum, Jamaica Plain, Mass. Numbered September, 1917.

A handsome tree from western China, up to 40 feet in height, with the trunk 8 to 20 inches in diameter, thin, pale-green leaves, and white to deep bluish-colored flowers, an inch or less across, which appear early in the spring. It is very similar to Sargent's cherry (*Prunus serrulata sachalinensis*).

45216. PRUNUS SUBHIRTELLA PENDULA (Sieb.) Tanaka. Amygdalaceæ. Rose-bud cherry.

Grown at the Plant Introduction Field Station, Rockville, Md., from scions presented by Mr. David Fairchild from his place, "In the Woods," Chevy Chase, Md. Originally introduced through the Yokohama Nursery Co., of Japan. Numbered September, 1917.

A small tree with drooping branches, mostly narrowly oval, light-green leaves, and long-stalked clusters of rose-pink flowers three-quarters of an inch across. One of the handsomest of early-flowering trees, producing its dainty flowers in profusion. Hardy in central New York. Deserves to be planted in all parts and as dooryard trees when there is room enough. Grows to very large size, but flowers when 3 years old. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2841.)

45217 and 45218. FRAGARIA spp. Rosaceæ. Strawberry.

From Bedford, England. Plants purchased from Laxton Bros. Received September 28, 1917.

45217. Keen's Seedling. An old and well-known English sort of the finest quality, which does not generally succeed in America. Flowers perfect; fruit large, roundish, often cockscomb shaped, dark purplish scarlet, with polished surface and rich, highly flavored, firm flesh. (Adapted from *Downing, Fruits and Fruit Trees of America*, p. 992.)

45218. Old Pine, or Carolina. An American variety, with perfect flowers and medium-sized, conical, bright-scarlet fruit, with a neck and solid, juicy, rich flesh. (Adapted from *Downing, Fruits and Fruit Trees of America*, p. 998.)

45219. CALYCOPHYSUM BREVIPES Pittier. Cucurbitaceæ.

From Venezuela. Seeds presented by Mr. Henri Pittier, director, Estacion Experimental y Catastro de Baldios, Caracas. Received September 28, 1917.

"(Cerro de Avila, above Caracas, August, 1917.) A *Calycophysum*, which I collected at about 1,700 meters altitude on the slopes of the Avila Mountains above Caracas. It is a high climber, growing in the outskirts of the forest. The fruit is large and quite ornamental, the pericarp being of an intense orange-yellow color. It looks very attractive to a thirsty person, and when I picked the first one I opened and tasted it without losing time. The flavor was quite sweet, and I lost no time in swallowing the 'swallowable' part of a whole fruit. Five minutes later my mouth was burning just as if I had swallowed a very hot pepper and my insides soon began to make themselves felt. For several hours I had nausea and some fever, with a strong headache. Then it passed away. I suspect the peppery agent to be contained in the dissepiments of the seeds, and if it could be made away with, the fruit would certainly be very palatable. It goes mostly by the name of *parcha de culebra*, *parcha* being a name common to the edible *Passiflora* fruits. But I am also assured that it is the *coco de mono*, to which depilatory properties are ascribed. The facial hair ornaments (?) which are the glory of men in other countries are here the common privilege of an unusual number of the members of the fair sex, and as they do not relish it, it is said that they make away with it by means of the endocarp of the *coco de mono*. I would not be surprised if this were the fruit in question, but the same name is given

also to the fruits of the two or three native species of *Couroupita*, and probably to those of other members of the *Lecythideæ*. So the question of the depilatory properties is not yet settled." (*Pittier*.)

45220. (Undetermined.) Apocynaceæ.

Lorocco vine.

From Tegucigalpa, Honduras. Seeds presented by Mr. I. H. Cammack, "La Misión." Received September 28, 1917.

"This is a deciduous perennial vine which grows best on moist mountain sides where the climate is always temperate. Its flowers and flower buds are fine for flavoring milk and vegetable soups, especially potato soup, giving it the flavor of oysters. The vine should have a space of 5 to 10 feet for climbing and spreading, and it will require greenhouse protection in cold weather." (*Cammack*.)

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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM OCTOBER 1
TO DECEMBER 31, 1917.

(No. 53; Nos. 45221 to 45704.)



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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRO- DUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1917 (NO. 53; NOS. 45221 TO 45704).

INTRODUCTORY STATEMENT.

This inventory covers the period from October to December, inclusive, 1917. During this time Agricultural Explorer Frank N. Meyer was on his last trip, exploring the upper Yangtze River around Ichang, and Agricultural Explorer Wilson Popenoe was in the Vera Paz region of Guatemala (fig. 1). The collections of these two men form a substantial addition to the new plants of this country.

Mr. Meyer found about 40 varieties of citrus fruits in the region around Ichang; of these he sent in some interesting varieties of mandarins and pummelos (Nos. 45311 to 45315) and a large-fruited Wampi (*Clauцена lansium*, No. 45328), which is closely related to Citrus but has small pubescent fruits. As yet this fruit is practically unknown in America, although a great favorite with the Chinese. Mr. Meyer's suggestion that the large ocher-yellow flowered *Lycoris aurea* and the carmine-red flowered species *L. radiata*, together with its yellow variety, ought to thrive throughout the South is worth emphasizing. He found these in great abundance in Hupeh Province (Nos. 45525 to 45528). The Ichang lemon (No. 45534) he thinks may be distinctly hardier than the common lemon, and the rare Chinese horse-chestnut (*Aesculus wilsonii*, No. 45532), which has narrower leaves than the common species grown by us, is now well established in America through the seeds which Mr. Meyer procured.

It seems probable that few of the introductions by Mr. Meyer will be of greater value than some of his cultivated varieties of that blight-resistant species of pear (*Pyrus calleryana*, No. 45586) which he calls the domestic crab-apple pear and which he found in many varieties near Kingmen, Hupeh. The pioneer work of Dr. Reimer has brought this species of pear to the foreground because of its peculiar resistance to blight, and some of these cultivated sorts bid fair to become of great value for stocks upon which to work the

more luscious varieties of *Pyrus communis*. Under No. 45592 Mr. Meyer sent in 100 pounds of seed of the small-fruited wild pear of the same species, and specialists are experimenting with these.

Wilson Popenoe sends in from the Vera Paz region a small-fruited chayote no larger than a hen's egg (No. 45350); the inga, which he says is a fruit worthy of a place in the gardens of the amateur in southern Florida (No. 45351); an interesting tropical walnut (*Juglans mollis*, No. 45352), which makes a small tree only 45 feet

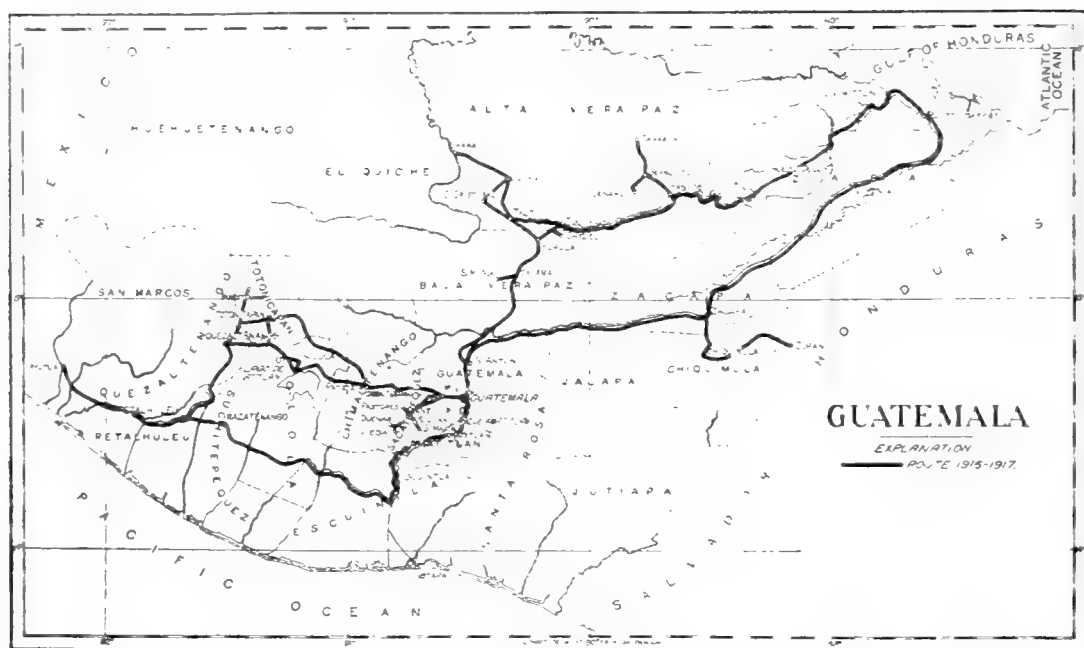


FIG. 1.—Wilson Popenoe's routes of exploration in Guatemala from September 6, 1916, to December 13, 1917. The search for hardy avocados which Mr. Popenoe made during the 16 months of his agricultural exploration of Guatemala constitutes a noteworthy horticultural accomplishment. His journeys on muleback and on foot traversed over 2,000 miles of the mountain trails and roads of that Republic and resulted in the successful introduction into this country of 36 distinct types of the hard-shelled hardy avocado. Each one of these represents the successful importation of bud sticks from a selected seedling avocado tree from which he collected the fruits and of which he took record photographs, not only of the fruit itself but of the tree as well. The collection is further remarkable in that each number in it is backed up by a careful description, written on the spot, of the characteristics of the tree from which the budwood was taken. This precaution will make it possible years hence to study the variation which takes place in the fruit, as well as the trees which are grown from the imported buds. In addition to this, which was Mr. Popenoe's main quest, he discovered and introduced two wild relatives of the avocado, the *anay* and the *coyó*, both worthy of the careful attention of tropical horticulturists, and also 190 other especially selected rare and useful species of plants which he believes can be grown in the warmer sections of the United States and similar regions throughout the world.

tall, but which fruits abundantly and bears nuts with even thicker shells than those of our own black walnut: a species of tropical *Rubus* (No. 45356) with soft seeds and of good flavor, which fruits abundantly and should be tried in the Southern States; and seeds of the *coyó* (*Persea schiedeana*, No. 45354), on which will be grafted his large-fruited variety of this new fruit, which he declares is more highly esteemed by the Indians of the Vera Paz region than the avocado itself and deserves to be brought to the attention of all

tropical horticulturists as a hitherto entirely neglected tropical fruit tree. From the valley of the Rio Polochic he sends in seeds of a handsome flowering shrub (*Pogonopus speciosus*, No. 45360) with brilliant scarlet bracts suggestive of the poinsettia; and from the vicinity of San Cristobal a wild grape (No. 45361) with fair-sized berries, which he thinks is the largest fruited grape he has yet seen in the Tropics and should be capable of development by selection.

Six of Mr. Popenoe's selected avocados are described in this inventory, including the Akbal (No. 45505), which he considers, on account of its earliness, one of his promising sorts, the Manik (No. 45560), Kaguah (No. 45561), Ishim (No. 45562), Kanan (No. 45563), and Chabil (No. 45564). Under No. 45506 he describes the fruit of a species of *Malpighia* called the *azerola*, which may be hardier than its relative, the Barbados cherry, and if so would be well worth distributing as a dooryard shrub in southern California and even in southern Texas.

The possibility of a terrestrial orchid which would produce a good flower for use in the house is emphasized by Mr. Popenoe in his introduction, from an altitude of 4,000 feet, of the *Sobralia macrantha* (No. 45547), which grows there to a height of 4 feet and has a large showy flower. His "ilama," a species of *Annona* (*A. diversifolia*, No. 45548), which appears to be adapted to the lower levels of the tropical coastal plain, can not fail to be of interest to tropical horticulturists, for it has fruits as fine in flavor as the cherimoya and will thrive on the coastal plain where the cherimoya refuses to grow. Dr. Safford has named after Mr. Popenoe a new species of *Dahlia* (No. 45578), which in his opinion is in all probability the ancestor of the cactus dahlia and to which the breeders may have to turn to rejuvenate their stock of this wonderful flowering plant.

With the introduction of the large-fruited tropical hawthorn (No. 45575), which Mr. Popenoe found growing in the mountains of Guatemala and which is used for the production of a distinctive and delicate preserve by the people there, we now have in this country the material for the breeding of new types of hawthorns, which should be adapted to a wide range of conditions. Our numerous native species, the Chinese *Crataegus pinnatifida* with its large-fruited strains, and this Guatemalan tropical species, *C. stipulosa*, should attract some one to the problem.

The remarkable breeding work of Dr. Walter Van Fleet is well known to the rosarians, but his activities in other fields are less well known. This inventory gives descriptions of selections and hybrids (Nos. 45330 to 45342) which he has produced by the breeding of the chinquapin (*Castanea pumila*), the Chinese chestnut (*C. mollissima*), the American chestnut (*C. dentata*), and the Japanese species (*C.*

crenata). He has been working with these for many years and has a remarkable collection of bearing trees at his place in Maryland. The selections of the Chinese species are so resistant to the bark disease as to make it safe to recommend them for orchards, where with careful watching they ought to be as safe investments as peaches or pears or others of our fruit trees. They are not large forest trees. The fate of that other Chinese chestnut (*Castanea henryi*, No. 45670), which grows to a height of 75 to 100 feet on the upper Yangtze River as far west as Mount Omei, remains to be seen. If it should prove resistant to the bark disease it might in a measure take the place of our forest chestnut in certain localities. Although the barberry has been given a jolt through the association which its rust disease has with the rust of wheat, there are species that are perfectly safe from attacks of rust and may be grown freely as doorway shrubs. Let us hope that this is the case with Dr. Van Fleet's cross (No. 45477) between *Berberis wilsonae*, which E. H. Wilson found in China, and *B. aggregata*. The hybrids are very handsome plants for borders, having a spreading low-growing habit, and are hardy in Maryland.

We are so accustomed to think of our own cereal crops as always having been the great food-producing plants of the world that it is a surprise to find in Mexico under cultivation to-day a relative of our common pigweed which in the times of Montezuma formed one of the staple cereal foods of the Aztecs. The seeds of this amaranth (*Amaranthus paniculatus*, No. 45535) filled 18 granaries, each holding 9,000 bushels, in the time of the great ruler. It was made into cakes known as "alegría" and was so highly valued that it had a part in the religious ceremonies of that time. Our present interest in it arises from the fact that it has a most remarkably low water requirement and consequently has distinct possibilities in our Southwest, where water is precious. It may be hoped that our predilection for other but no more palatable grains will not be so strong as to make it impossible to market this ancient one of the Aztecs, which Mrs. Zelia Nuttall sends in from Mexico.

Lamb's-quarters (*Chenopodium album*) has been used in this country by many people, and those who know it declare it is more delicate than that introduced vegetable, spinach, which is now the fashion. The huauhtli of the Aztecs (*Chenopodium nuttalliae*, No. 45536), which Mrs. Nuttall sends in from Mexico, is there used when the seeds are "in the milk," and she considers it a most delicate vegetable.

One of the most interesting of recently introduced vegetables is the mitsuba of Japan (No. 45247), sent in by Mr. Barbour Lathrop as one of the commonest vegetables among the Japanese. Botanically it is *Deringa* (or *Cryptotaenia*) *canadensis*, and curiously enough

this species, although it occurs from Nova Scotia to Texas and was known in the old days as honewort, has never been cultivated or even used as a vegetable by Americans. It is easily grown and deserves to be carefully studied by amateurs. Its food value is probably similar to that of celery.

The success of the Japanese flowering cherries makes the introduction of the pink-flowered wild forest cherry (*Prunus serrulata* var. *sachalinensis*, No. 45248) of particular interest. The cherry-wood timber from it is said to be excellent, and if some one would plant a hillside with this tree it would not only make a place to which we should all sooner or later want to make a pilgrimage as one does to the Azalea gardens near Charleston, but in the years to come it would furnish for market an excellent quality of cherry wood.

So remarkable as money producers have been some of the new grasses introduced through the Office of Foreign Seed and Plant Introduction that cultivators are watching with a great deal of interest the behavior of the Napier grass of Rhodesia (*Pennisetum purpureum*, No. 45572). According to Harrison, the agrostologist of South Africa, it promises there to be one of the most remarkable drought-resistant fodder plants yet introduced into cultivation, making a yield of 27 tons of green fodder per acre and remaining green even during six or eight months of drought. It must be remembered that the South African dry season comes in the winter, when it is cool. It is very different from the scorching droughts of our own Plains. However, Napier grass is already making its mark in this country.

It is always with keen satisfaction that one records the arrival of the second generation of an imported plant in the New World. That loveliest of all flowering legumes *Canoensia maxima* (No. 45608), from the coast of Portuguese West Africa, was introduced in 1901 and scattered in vain in Florida. A plant was sent to Dr. R. M. Gray, in charge of the Harvard Experiment Station at Cienfuegos, Cuba. This has grown and flowered and produced fruit, so that this liana, named after the great Portuguese poet, Camoens, is successfully established in the West Indies. It deserves to be grown wherever it can be in the tropical forests of the New World.

The species of crab apple which was formerly much cultivated in Japan (*Malus prunifolia rinki*, No. 45679) but was driven out by the American varieties, according to Prof. Sargent, of the Arnold Arboretum, may prove as hardy as *Pyrus baccata*, and he suggests that it be crossed with the Siberian crab-apple varieties and new hardy varieties of apples procured for trial in Canada.

Dr. Trabut's suggestion that the wild Moroccan pear (*Pyrus mamorensis*, No. 45612), which inhabits the dry sandy noncalcareous soils of the Mamora, should be considered as a stock is well worthy of trial.

There is a place for a peach in the southern part of Florida, if only the tree suited to that region of tropical southern rains can be found. A freestone variety (No. 45662) of the peen-to type from the French West Indies, which is said to resist decay, may furnish this southern peach.

It has seemed a little strange that so excellent a fruit as that of the passion vine, which ranks among the best fruits of Australia, should still be practically an unknown fruit on our markets. The hard-shelled sweet granadilla of Guatemala (*Passiflora ligularis*, No. 45614), which instead of being purple in color is a deep orange-yellow and instead of shriveling keeps its plump form, may attract people more than the commoner species, *P. edulis*.

Mr. Frank N. Meyer's introduction of the grafted varieties of the Chinese jujube has resulted in the development of that very heat-resistant fruit in Texas and California. The introduction of 34 distinct varieties of jujubes from the island of Mauritius, which belong to a different botanical species (*Ziziphus mauritiana*, Nos. 45625 to 45658), may make the creation of new forms possible. This Mauritian fruit is said to be sold in the villages of the island in large quantities and to be appreciated by the Europeans as well as by the native inhabitants of the island. This inventory announces also the introduction of a third species from Argentina (*Ziziphus mistol*, No. 45227). Since no breeding has ever been done in this genus, it will be interesting to see what can be done in the crossing of these different species. News comes of the existence in the Punjab of jujubes of large size, whether of one of these species is not yet definitely known here.

The wide use of *Casuarina equisetifolia* as a street tree in southern Florida has engendered considerable discussion as to its benefits. It is possible that the Sumatra species (*C. sumatrana*, No. 45659), which is more handsome, may prove hardy enough and beautiful enough to warrant its substitution for the "Australian pine."

The breeders who are working with the genus *Ribes* will be glad to get the Chinese form, *Ribes fasciculatum chinense* (No. 45689), which is unique in that it ripens its bright-red fruits in the fall of the year instead of in the summer.

The Smyrna fig industry is an established thing in California, but apparently much work remains to be done in getting the best series of caprifig varieties which will harbor the Blastophaga. Dr. Trabut's hybrid (No. 45235) between the Abyssinian or Erythrean fig (*Ficus palmata*) and the common fig (*F. carica*) may play a rôle in this respect, since the Abyssinian species makes excellent caprifigs.

The botanical determinations of seeds introduced have been made and the botanical nomenclature revised by Mr. H. C. Skeels and the descriptive and botanical notes arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory, as of all the publications of this office. The manuscript of this inventory has been prepared by Miss Esther A. Celandier.

DAVID FAIRCHILD,

Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,

Washington, D. C., June 15, 1921.

INVENTORY.¹

45221 to 45225. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(*T. vulgare* Vill.)

From Guatrache, Pampa, central Argentina. Presented by Señor Juan Williamson, Estacion Agronomica, through the Office of Cereal Investigations. Received October, 1917.

45221. Barletta (Pampa).

45223. Barletta 24.

45222. Barletta 77.

45224. Barletta 44.

45225. Barletta from a farm in the vicinity of the experiment station (not from the fields of the station).

45226 and 45227.

From Oran, Argentina. Seeds presented by Mr. S. W. Damon. Received September 6, 1917.

45226. PASSIFLORA sp. Passifloraceæ.

Granadilla.

"A yellow-fruited, acid type which I consider superior to the purple type." (*Damon.*)

45227. ZIZIPHUS MISTOL Griseb. Rhamnaceæ.

Mistol.

A spiny tree, native to Argentina, up to 30 feet in height, with oval, leathery, short-stemmed leaves about an inch long and edible, black fruits about one-third of an inch in diameter.

For previous introduction and description, see S. P. I. No. 4436.

45228. NEPHROLEPIS sp. Polypodiaceæ. **Fern.**

From Finca Chejel, Baja Vera Paz, Guatemala. Plants collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received October 19, 1917.

"(No. 175. October 1, 1917.) A common fern found along watercourses in the vicinity of Purula, Baja Vera Paz, at altitudes of about 5,000 feet. It forms dense masses in open places among scrub." (*Popenoe.*)

45229. PRUNUS NIGRA Ait. Amygdalaceæ. **Plum.**

From Ottawa, Canada. Seeds purchased from Mr. W. T. Macoun, Dominion horticulturist, Central Experimental Farm. Received October 1, 1917.

"The cultivated trees of *Prunus nigra* in this district practically never have mature fruit on them, as the fruits become diseased before they become fully

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received when introduced by the Office of Foreign Seed and Plant Introduction; and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in this inventory will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

grown. It has been this way as long as I can remember—at least for 25 years. There might occasionally be a year with a few good fruits; but, as a rule, there are none. However, there is one man about here who has been cultivating these fairly extensively and keeping his trees thoroughly sprayed, and I am getting the seed from him. There is just a possibility of these being crossed with *Prunus americana*, as he has a few trees of the latter in his orchard." (Macoun.)

45230. BRUNSFELSIA HOPEANA (Hook.) Benth. Solanaceæ.

From Para, Brazil. Seeds presented by Senhor J. Simão da Costa. Received October 1, 1917.

"A slender twiggy free-branching shrub; leaves lanceolate-oblong, thin in texture, rich dark green, paler beneath. Flowers small but freely produced, solitary or in pairs all along the leafy growths; limb light violet-blue on first opening, fading to almost pure white with age; tube very slender, curved upwards, nearly white, 1 inch long; calyx three-fourths of an inch long, teeth obtuse." (Bailey, *Standard Cyclopedia of Horticulture*, vol. 1, p. 582.)

45231. ANNONA MARCGRAVII Mart. Annonaceæ.

From Caracas, Venezuela. Seeds presented by Mr. Henri Pittier, director, Estación Experimental y Catastro de Baldios. Received October 4, 1917.

A tree with the trunk, form of the branches, and color of the bark resembling those of the orange, but with different leaves, flowers, and fruit. Its leaves are about half a foot long, deep green and glossy above, pale green beneath, and tongue shaped. The yellow flower is large and conspicuous, and has a sickening sweet odor. It is followed by the fruit, which ripens in December and January. This fruit, which is conoid in shape and about 5 inches in greatest diameter, is green and white mixed or pale green on the outside, and the surface is areoled, with a brown tubercle in each areole. Not until the fruit falls of its own accord is it eaten, and then it is so soft that it can be peeled with the fingers. The yellowish pulp has an odor like fermenting bread dough to which honey has been added, with a sweetish subacid and somewhat bitter taste. The seeds are oval, golden yellow and glossy, smooth, and hard. This tree is a native of Brazil and Venezuela. (Adapted from Safford, *Contributions from the National Herbarium*, vol. 18, pt. 1, p. 25.)

45232. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Tomato.**

From the Philippine Islands. Presented by Mr. O. D. Conger, U. S. N., Washington, D. C. Received October 5, 1917.

"From the Province of Cavite, near the municipality of Alfonso. Seeds of a tomato growing wild in the Philippines. The vine should spread out in every direction and climb up on any near-by house or tree. I found these vines growing in the jungles usually in places where there had been habitations in former times. The fruit grows to the size of a large cherry." (Conger.)

45233 and 45234. TRITICUM AESTIVUM L. Poaceæ. **Wheat.**
(*T. vulgare* Vill.)

From Tokyo, Japan. Presented by Mr. Teizo Ito, chief, Plant Industry Division, Imperial Department of Agriculture and Commerce. Received October 12, 1917.

45233. *Iga-chikugo.*

45234. *Aka-komugi.*

45235 and 45236.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received October 13, 1917. Quoted notes by Dr. Trabut.

45235. *FICUS PALMATA* × *CARICA*. Moraceæ.

Fig.

"I am sending you seeds of *Ficus palmata* fertilized by *F. carica*. *F. palmata*, originally from Abyssinia and Erythrea, appears interesting; first, as one of the probable ancestors of *F. carica*; second, the male plants are excellent caprifigs to supply the Blastophaga. The autumn figs (Mammoni) now have the male flowers and at this moment it is still possible for the Blastophaga to carry the pollen. The female plants yield mediocre edible fruits. The hybrids should be interesting for desert regions."

45236. *VITIS VINIFERA* L. Vitaceæ.

Grape.

"*Cabernet* × *Malbec* No. 2. *Cabernet* is, in my opinion, the best vine for red wine of the Bordeaux type; but it is a light bearer. I have interesting hybrids. The seeds which I am sending you come from a number which have given us an excellent wine."

45237 and 45238. *PRUNUS ARMENIACA* L. Amygdalaceæ.

Apricot.

From Chefoo, China. Seeds presented by Mr. A. Sugden, Commissioner of Customs, through Mr. Lester Maynard, American consul, Chefoo. Received October 13, 1917.

45237. Seeds sent in as a supposed cross between apricot and plum, resulting from grafting plums on apricots. The seeds do not appear to differ from those of ordinary apricots.

45238. "Seeds of some very good apricots, which were of fair size, good flavor, and looked well; there was a lot of red about them." (*Sugden*.)

45239. *DEGUELIA* sp. Fabaceæ.

(*Derris* sp.)

From Luzon, Rizal Province, Philippine Islands. Fruits presented by Mr. E. D. Merrill, Bureau of Science, Manila. Received October 15, 1917.

"*Tugli* or *tubli*. This is supposed to be one of the species of *Derris* used here for fish poison. The seeds are not so used, only the bark and roots." (*Merrill*.)

45240. *CYNARA HYSTRIX* Ball. Asteraceæ.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received October 15, 1917.

"Seeds of *Cynara hystrix* from Morocco, a species near to *C. cardunculus*, interesting to study and to hybridize. The seeds are large." (*Trabut*.)

45241. *ACTINIDIA ARGUTA* (Sieb. and Zucc.) Planch. Dilleniaceæ.

From Bronx Park, N. Y. Cuttings from Mr. George V. Nash, New York Botanical Garden. Received October 18, 1917.

"There is no finer climbing shrub for porches in this latitude than *Actinidia arguta*. Its foliage, which is of a beautiful dark-green color with reddish midribs, seems to be practically free from diseases. Its flowers are large, greenish white, and attractive. It is a very vigorous grower and will

cover a trellis 20 feet long and 10 feet high in two or three years. The flavor of the fruits is very sweet and pleasant, reminding one of figs. They are about the size of damson plums, have very thin skins, and are filled with extremely small seeds. A climbing plant which deserves the widest distribution." (*Fairchild*.)

45242 to 45245.

From Honolulu, Hawaii. Seeds presented by Mr. J. F. Rock, botanist, College of Hawaii. Received October 19, 1917.

45242. *HIBISCADELPHUS GIFFARDIANUS* Rock. Malvaceæ.

"The *Hau kuahivi* is a remarkable tree. At first appearance one would think it to be the common *Hau* (*Hibiscus tiliaceus*), but at closer inspection one can not but wonder at the most peculiar shape of the deep magenta flowers and the large yellow tuberculate capsules. It is a rather low tree, with not erect but rather inclining trunk a foot in diameter, with a many-branched round crown. It differs from the genus *Hibiscus* in its very peculiar flowers [which are curved and convoluted] and mainly in the calyx, which is not persistent with the capsules but drops together with the bracts as soon as the capsules are formed." (*Rock*.)

45243. *HIBISCADELPHUS HUALALAIENSIS* Rock. Malvaceæ.

A tree, 16 to 23 feet high, with erect trunk, white bark, somewhat reniform leaves, and small ovate capsules. It belongs to the almost-extinct genus *Hibiscadelphus*, of the three species of which two are represented by a single tree each and the present one by a dozen or so living trees. Seedlings of all the species are growing, however, in various Hawaiian gardens.

This exceedingly interesting and distinct species was found by the writer in the year 1909 on the lava fields of Mount Hualalai, in North Kona, Hawaii, and in the forest of Waihou of the same district, where about a dozen trees are still in existence. The writer revisited the above locality in March, 1912, and found the trees in flower, while on his previous visit, June 18, 1909, only a few worm-eaten capsules could be found. The trees are badly attacked by several species of moths which feed on the leaves and mature capsules. Mr. Gerrit Wilder, however, succeeded in growing a few plants from healthy seeds collected by the writer. (Adapted from *Rock, Indigenous Trees of the Hawaiian Islands*, p. 301.)

45244. *PITTOSPORUM HOSMERI LONGIFOLIUM* Rock. Pittosporaceæ.

The variety differs from the species in that the leaves are very much longer and the capsules are smaller. The tree is quite common at Kapua, South Kona, Hawaii, on the lava flows, and occurs also at Kilauea and Hualalai, but does not reach such a height and size as at Puuwaawaa. The trees of the latter locality are loaded with fruit during June and July, while those of Kapua bear mature fruit during the month of February. However, the fruiting season of these, like nearly all the other Hawaiian trees, can not be relied upon. The fruits of *Pittosporum hosmeri* and variety are a source of food for the native crow, which pecks open the large woody capsules and feeds on the oily seeds within. (Adapted from *Rock, Indigenous Trees of the Hawaiian Islands*, p. 161.)

45242 to 45245—Continued.**45245. VACCINIUM RETICULATUM** J. E. Smith. Vacciniaceæ. **Ohelo.**

"Seeds of *Vaccinium reticulatum*, a species which grows up to an altitude of 10,000 feet on the big islands (Maui and Hawaii). It is the well-known *ohelo* of the natives, and the fruits are eaten and used similarly to your eastern *Vacciniums*." (Rock.)

A low erect shrub, 1 to 2 feet high, the stiff crowded branches angular and densely foliose; leaves coriaceous; flowers solitary; berry globose, one-third to one-half an inch in diameter, pale rose or yellow, covered with a waxy bloom. Found in the high mountains of Hawaii and eastern Maui from about 4,000 up to 8,000 feet, where it grows gregariously, often covering large tracts of open ground. The shining fleshy berry, the *ohelo*, is the principal food of the wild mountain goose. Although astringent, it is not unpleasant to the taste, and makes a good preserve. (Adapted from *Hillebrand, Flora of the Hawaiian Islands*, p. 271.)

45246. CARICA PAPAYA L. Papayaceæ. **Papaya.**

From Honolulu, Hawaii. Seeds presented by Mr. G. P. Wilder. Received October 6 and 19, 1917.

"Seed from selected fruit." (Wilder.)

45247. DERINGA CANADENSIS (L.) Kuntze. Apiaceæ. **Mitsuba.**
(*Cryptotaenia canadensis* DC.)

From Brooklyn, N. Y. Plants presented by Mr. C. Stuart Gager, director, Brooklyn Botanic Garden. Received October 26, 1917.

"Mitsuba is a common wild plant of the American continent, being scattered pretty well over America from New Brunswick to South Dakota and southward to Georgia and Texas. It belongs to the family which has furnished a number of our good garden vegetables such as celery, the carrot, and the parsnip.

"Mr. Lathrop writes from Japan regarding mitsuba: 'Udo costs more than mitsuba, and far less of it is consumed by the poor. Every part of the mitsuba is edible, and its leaves, stems, and roots are cooked as desirable vegetables. Like udo, it is grown from seed and in rather light soil. It requires less time for maturing than udo and is procurable on the market at far less expense. Mitsuba is popular with everybody from the highest rank to the lowest. Besides being cooked, the stems are eaten as we eat celery.'

"Pai ts'ai has found its niche in our agriculture, and large quantities are being consumed; and udo is being grown by a large number of amateurs who have learned to like it. This new vegetable, mitsuba, also from the Orient, may find its place beside them. The ease of culture of mitsuba; the fact that the plant can be grown over such a wide range of territory; and the excellence of its green leaves, blanched shoots, and roots, for use in a variety of ways, should appeal to our practical sense and induce us to give it a careful test under widely varying conditions and through a number of seasons. Especially should it be tried on celery lands—in the Northern States, along the Gulf coast, and in California—to determine its possible economic importance and to see if it has any points of advantage over celery." (Fairchild.)

45248. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino.
(P. sargentii Rehder.) [Amygdalaceæ. **Sargent's cherry.**

From Tokyo, Japan. Seeds purchased from the Tokyo Plant, Seed, & Implement Co. Received October 19 and 22, 1917.

A large tree, attaining a height of 60 to 80 feet, which produces valuable wood; the bark is reddish and lustrous, the branches becoming chestnut brown in age. The leaves are large, ovate, glabrous, and lustrous, turning to crimson and yellow in autumn. Flowers two to four together, very showy, rose pink, about 1½ inches across, appearing before the leaves. Fruit the size of a pea, bright red, becoming black and shining at maturity. A valuable timber tree of great ornamental value which is hardy in New York and Massachusetts and bears its handsome broad flowers in great profusion. Native of northern Japan, Sakhalin, and Chosen (Korea). (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2839.)

45249 and 45250.

From Kerman, Persia. Seeds presented by Capt. J. N. Merrill, First Regiment of Cavalry, Persian Army. Received October 10, 1917.

45249. CITRUS GRANDIS (L.) Osbeck. Rutaceæ.

Pummelo.

(C. decumana Murray.)

"Seeds of the Persian 'pumaloe,' a fruit like that of China and the Philippines, about 8 or more inches in diameter, with a skin that is spongy, very thick, and oily. The fruit is slightly bitter and acid, but not disagreeable to the taste. Used by the Persians as a decorative fruit: a preserve made by boiling the skin with sugar is highly esteemed. The fruit is grown at Khabis, some 65 miles east of here, elevation 1,800 feet, near the edge of the great desert of Persia. Personally, I found the fruit, when eaten with powdered sugar, a good dish, though the Persians do not eat it." (Merrill.)

45250. LAWSONIA INERMIS L. Lythraceæ.

Henna.

"A shrub bearing very fragrant, small, white, rose-colored, or greenish flowers. It is readily propagated from cuttings, grows in the form of a bush sending up shoots, and is suitable for hedges. When kept clipped it is not unlike privet. Its odor at short range is rank and overpowering, but from a distance it is like that of mignonette. On the shores of Central America the land breezes frequently waft the odor out to sea. This species is the 'sweet-smelling camphire' of Solomon. It is a native of western Asia, Egypt, and the African coasts of the Mediterranean, and now grows wild in some parts of India. It is also cultivated in many countries. It has been a favorite garden plant in the East from the time of the ancient Egyptians to the present day." (W. E. Safford.)

45251 to 45262.

From China. Seeds presented by Dr. Yamei Kin, Peking, China. Received October 23, 1917. Quoted notes by Dr. Kin.

45251 to 45254. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ.

Pai ts'ai.

45251. "*Mi sze pai ts'ai.* Especially useful for salting down."

45252. "*Yu ts'ai.* Light variety, from Yuyao, Chekiang Province.

Said to be a very rapid grower, coming to maturity in four weeks

45251 to 45262—Continued.

or, at most, not more than six weeks from the time of germination. It is specially prized for its sweet 'buttery' flavor which I have heard is characteristic of certain varieties of lettuce. It is not eaten raw or for salad purposes; but, dropped into boiling hot water after being cut up in fairly large pieces, it makes a staple green vegetable. The rapid growth struck me as being valuable, for if in the same time as is necessary for growing lettuce one can obtain a good cabbage green, it will undoubtedly be as popular here as it is in China."

45253. "*Pai ts'ai*. From Taianfu, Shantung Province."

45254. "*Yu ts'ai*. Dark-colored, late variety from Yuyao, Chekiang Province. Grows taller than the very early kind, and while also good for greens, is of a darker color, it is said; and the seed is used largely for the production of the so-called rapeseed oil that is used so largely in food all through Middle China and South China."

45255 and 45256. *CASTANEA CRENATA* Sieb. and Zucc. Fagaceæ.

Chestnut.

"Japanese chestnuts from Hangchow, Chekiang Province."

45255. A variety with large nuts.

45256. A variety with medium-sized nuts.

45257. *CUCUMIS MELO* L. Cucurbitaceæ.

Muskmelon.

"White melon from Tientsin, Chihli Province."

45258. *CUCUMIS SATIVUS* L. Cucurbitaceæ.

Cucumber.

"Early cucumber from Taianfu, Shantung Province."

45259. *CUCURBITA PEPO* L. Cucurbitaceæ.

Squash.

Parti-colored squash from Taianfu, Shantung Province."

45260 and 45261. *RAPHANUS SATIVUS* L. Brassicaceæ.

Radish.

45260. "Round radish. Will not stand frost. Plant about July."

45261. "Long radish. Hardy. Plant later than the round variety."

45262. *SPINACIA OLERACEA* L. Chenopodiaceæ.

Spinach.

"*Mi sze Chi Yien*. From Woosung, Kiangsu Province. Spinach, to be planted the last of August. Cover with soil 1 inch thick; will sprout in a month. Can cut one crop in January and another in March."

45263 to 45320.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received October 6, 1917. Quoted notes by Mr. Meyer.

45263. *BRASSICA* sp. Brassicaceæ.

Mustard.

"(No. 2393a. Hankow, Hupeh Province. June 5, 1917.) *Chieh tzü*. Mustard seeds, said to have come from the north, where mustard is a summer crop. However, it might have been grown as a winter crop in the Yangtze Valley. Price, 37 cents, Yuan silver, per catty [$1\frac{1}{2}$ pounds]. Test this mustard as a summer crop where flax thrives; as a winter crop in the Gulf States."

Received as *Brassica juncea*, but apparently not this species.

45263 to 45320—Continued.

45264. *PERILLA NANKINENSIS* (Lour.) Decaisne. Menthaceæ.
(*P. arguta* Benth.)

“(No. 2394a. Hankow, Hupeh Province. June 5, 1917.) *Hei su tzū* (black perilla). An annual herb, germinating very early in the year; generally with purple foliage, though green plants are seen also. The young plants are eaten as a potherb or are used to give flavor to soups. The odor, however, is not pleasing to most people, since it resembles that of the bedbug (*Cimex*). The seeds are used medicinally for coughs and in throat troubles, together with other preparations.”

45265. *PERILLA FRUTESCENS* (L.) Britton. Menthaceæ.
(*P. acymoides* L.)

“(No. 2395a. Hankow, Hupeh Province. June 5, 1917.) *Pai su tzū* (white perilla). An annual herb grown entirely for its seed, from which is extracted an oil that is used in waterproofing. The seeds are also used medicinally, like the preceding number, and as a bird food.”

45266 to 45268. *ORYZA SATIVA* L. Poaceæ. Rice.

45266. “(No. 2396a. Hanyang, Hupeh Province. March 6, 1917.) *Ching shui mi ku* (clear-water rice grain). A fine local variety of rice, said to be prolific and early ripening. On account of its earliness to be tested primarily in California.”

45267. “(No. 2397a. Changsha, Hunan Province. May 12, 1917.) *Li ku* (corn grain). A fine variety of rice, said to be an early ripener. To be tested like the preceding number.”

45268. “(No. 2399a. Hankow, Hupeh Province. March 9, 1917.) *Ching shui mi* (clear-water rice). A fine quality of early ripening rice. To be tested like the preceding numbers.”

45269 to 45295. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.
(*Glycine hispida* Maxim.)

[Note: These numbers are nearly all said to be late-ripening varieties of soy beans; they come from a region greatly resembling in climate the Gulf States (southern parts). They should therefore be tested in districts where cotton and rice are grown.]

45269. “(No. 2401a. Hankow, Hupeh Province. March 7, 1917.) *Huang tou* (yellow bean). A small to medium-sized, yellow soy bean, used mostly as a human food in the form of bean curd.”

45270. “(No. 2402a. Wuchang, Hupeh Province. March 9, 1917.) *Huang tou*. A small to medium sized, yellow soy bean.”

45271. “(No. 2403a. Changsha, Hunan Province. May 16, 1917.) *Huang tou*. A small, yellow soy bean, used almost exclusively for bean-curd production.”

45272. “(No. 2404a. Ichang, Hupeh Province. March 24, 1917.) *Huang tou*. A small, yellow soy bean, said to ripen in early August. Used like the preceding number.”

45273. “(No. 2405a. Changsha, Hunan Province. May 16, 1917.) *Huang tou*. A small to medium-sized, yellow soy bean. Used like the preceding numbers.”

45274. “(No. 2406a. Ichang, Hupeh Province. May 24, 1917.) *Huang tou*. A medium-sized, yellow soy bean with a dark hilum. Said to be a medium late ripener.”

45263 to 45320—Continued.

45275. "(No. 2407a. Ichang, Hupeh Province. March 24, 1917.)
Huang tou. A large yellow soy bean."
45276. "(No. 2408a. Changsha, Hunan Province. May 16, 1917.)
Huang tou. A medium-sized, yellow soy bean."
45277. "(No. 2409a. Ichang, Hupeh Province. March 24, 1917.)
Huang tou. A very small variety of yellow soy bean."
45278. "(No. 2410a. Wuchang, Hupeh Province. March 9, 1917.)
Hsiao huang tou (small yellow bean). A very small variety of yellow soy bean."
45279. "(No. 2411a. Ichang, Hupeh Province. March 24, 1917.)
Huang tou. A small, greenish yellow soy bean."
45280. "(No. 2412a. Ichang, Hupeh Province. March 24, 1917.)
Huang tou. A small, greenish yellow variety of soy bean, used almost entirely in bean-curd production."
45281. "(No. 2413a. Shuichaipang, Hupeh Province. April 2, 1917.)
Hsiao huang tou (small yellow bean). An exceedingly small variety of yellowish soy bean, used in making bean curd."
45282. "(No. 2414a. Changsha, Hunan Province. May 12, 1917.)
T'ien ch'ing tou (field green bean). A medium-large, pale-green variety of soy bean; rare. Eaten as a sweetmeat when roasted with sugar; it is then a very tasteful, wholesome, and nourishing product."
45283. "(No. 2415a. Changsha, Hunan Province. May 16, 1917.)
Ch'ing tou (green bean). A dull pale-green variety of soy bean."
45284. "(No. 2416a. Changsha, Hunan Province. May 16, 1917.)
Ch'ing tou. A small, green soy bean, often used as an appetizer with meals, when slightly sprouted, scalded, and salted. Also eaten as a fresh vegetable when having firm sprouts 3 inches long."
45285. "(No. 2417a. Ichang, Hupeh Province. March 24, 1917.)
Ch'ing pi tou (green skin bean). A dark-green soy bean of medium size, used like the preceding number. The beans are also eaten fried in sweet oil with salt sprinkled over them, as an appetizer before and with meals."
45286. "(No. 2418a. Hankow, Hupeh Province. March 7, 1917.)
Ch'ing tou. A medium-sized, dull-green variety of soy bean, used in the same way as the preceding number."
45287. "(No. 2419a. Ichang, Hupeh Province. March 24, 1917.)
Ch'ing p'i tou. A medium-sized variety of green soy bean, often speckled with black. Eaten like No. 2416a [S. P. I. No. 45284]."
45288. "(No. 2420a. Changsha, Hunan Province. May 16, 1917.)
A rare variety of soy bean, of pale-green color, with brown splashes."
45289. "(No. 2421a. Changsha, Hunan Province. May 12, 1917.)
Ch'a hua tou (tea-flower bean). A peculiar variety of soy bean, of dull brown color, said to ripen very late. Locally much eaten when roasted, with salt sprinkled over, like salted peanuts. Very nourishing and appetizing. Well worth introducing to the American public as a new, wholesome, and nourishing sweetmeat."

45263 to 45320—Continued.

45290. "(No. 2422a. Ichang, Hupeh Province. March 24, 1917.)
Hei tou (black bean). A medium-large, black soy bean, used when boiled, as a food for hard-working field animals and for oil production; it is also eaten by the poor."
45291. "(No. 2423a. Hankow, Hupeh Province. March 7, 1917.)
Hei tou. A medium-sized, black soy bean, used like the preceding number."
45292. "(No. 2424a. Wuchang, Hupeh Province. March 9, 1917.)
Hei tou. A medium-sized variety of black soy bean; said to be an early ripener. Used like No. 2422a [S. P. I. No. 45290].
45293. "(No. 2425a. Wuchang, Hupeh Province. March 9, 1917.)
Hsiao hei tou (small black bean). A small, flat, black soy bean, used when boiled, salted, and fermented as the main ingredient in a sauce; also fed, when boiled, to water buffaloes."
45294. "(No. 2426a. Changsha, Hunan Province. May 16, 1917.)
Hei tou. A small, flat soy bean of shining black color, used like the preceding number."
45295. "(No. 2427a. Changsha, Hunan Province. May 16, 1917.)
Hci tou. A small, round variety of soy bean of dull black color; used like No. 2425a [S. P. I. No. 45293]."
- 45296 and 45297. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.
45296. "(No. 2428a. Ichang, Hupeh Province. March 24, 1917.)
Hua ssü chi tou (mixed or variegated four seasons bean). Multi-colored strains of garden beans, much cultivated as summer vegetables. To be tested in the southern sections of the United States."
45297. "(No. 2429a. Ichang, Hupeh Province. March 24, 1917.)
Ssü chi tou (four seasons bean). A reddish variety of garden bean, used like the preceding number. To be tested like No. 2428a."
- 45298 and 45299. *PHASEOLUS ANGULARIS* (Willd.) W. F. Wight.
Fabaceæ. Adsuki bean.
45298. "(No. 2430a. Hankow, Hupeh Province. March 7, 1917.)
Hung tou (red bean). A large, red, adsuki bean eaten boiled with dry rice and in soups; also pounded with sugar into a paste and used as a filling in certain cakes. Produces bean sprouts of excellent juicy quality, which can be raised at home in winter."
45299. "(No. 2431a. Hankow, Hupeh Province. May 30, 1917.)
Hung lü tou (red-green bean). A rare variety of adsuki bean, of red color. Utilized like the preceding number. Said to ripen in August."
45300. *PHASEOLUS AUREUS* Roxb. Fabaceæ. Mung bean.
"(No. 2433a. Hankow, Hupeh Province. March 7, 1917.) *Lü tou* (green bean). Mixed strains of dull and shining green mung beans; utilized like No. 2430a [S. P. I. No. 45298]."
45301. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.
"(No. 2434a. Hankow, Hupeh Province. March 7, 1917.) *Pai chiang tou* (white precious bean). A black-eyed, white cowpea eaten as a human food; boiled with dry rice generally, but also much used in stews and soups. The young pods are used a great deal as a vegetable; they are also dried for winter use, and in some localities are pickled in brine."

45263 to 45320—Continued.

45302. *VIGNA CYLINDRICA* (Stickm.) Skeels. Fabaceæ. Catjang.

“(No. 2435a. Shuichaipang, Hupeh Province. April 2, 1917.) *Hung chiang tou* (red precious bean). A small, red-brown cowpea grown on pebbly river flats. Used as human food.”

45303 and 45304. *PISUM SATIVUM* L. Fabaceæ. Garden pea.

45303. “(No. 2436a. Ichang, Hupeh Province. March 24, 1917.) *Wan tou*. A medium-sized, pale yellow variety of pea, grown as a winter crop throughout the Yangtze Valley on rice lands which have been drained for the winter months. Sown in October and harvested in April. The peas are boiled either with the pods, when very tender, or after shelling, when old. When dry they are used in stews or soups and baked into cakes. In the winter the sprouted peas are eaten after having been scalded. A fresh gelatine is also made from them, much eaten during the hot summer months, with sauce and pickles, as a ‘pick-me-up’ between meals. To be tested as a winter crop in the southern sections of the Gulf States and in California.”

45304. “(No. 2437a. Hankow, Hupeh Province. March 7, 1917.) *Wan tou*. A small, pale-yellow variety of pea, grown and used like the preceding number.”

45305 to 45307. *VICIA FABA* L. Fabaceæ. Broad bean.

45305. “(No. 2438a. Ichang, Hupeh Province. March 24, 1917.) *Ts'an tou* (silkworm bean). A medium large variety of broad bean, much grown as a winter crop on rice lands which have been drained for the cool season. The beans are much eaten when fresh, like green peas, and they form a very tasteful and nutritious dish. After soaking in water over night the dry beans are often fried in oil, and salt is sprinkled over them; they are then eaten as a delicacy, like salted peanuts. The Chinese name is possibly given on account of the silky hairs covering the outside and the inside of the pods. To be tested as a winter crop in the southern parts of the Atlantic and Gulf States and on the Pacific coast; as a summer crop in the intermountain regions and along the northern Pacific coast.”

45306. “(No. 2439a. Hankow, Hupeh Province. March 7, 1917.) A somewhat smaller variety than the preceding number, otherwise the same remarks apply to it.”

45307. “(No. 2440a. Ichang, Hupeh Province. March 24, 1917.) *Hsiao ts'an tou* (small silkworm bean). A very small variety of broad or horse bean. Grown like the two preceding numbers. A meal is made from this bean, which is eaten by the poor in the form of noodles and dumplings. To be tested like No. 2438a.”

45308. *LENTILLA LENS* (L.) W. F. Wight. Fabaceæ. Lentil.
(*Lens esculenta* Moench.)

“(No. 2441a. Ichang, Hupeh Province. March 24, 1917.) *Ching tou* (capital bean). A small brown variety of lentil, grown as a winter crop on rather poor lands in the mountain districts of western Hupeh. The seeds are eaten boiled in stews and soups, but are not much appreciated. To be tested like No. 2438a.”

45263 to 45320—Continued.

45309. INDIGOFERA TINCTORIA L. Fabaceæ.

Indigo.

“(No. 2442a. Hankow, Hupeh Province. June 14, 1917.) *Huai lan* (blue legume). A plant from which a blue dye is obtained; said to be grown on well-drained land. The seed is sown in April, and the twigs with leaves are harvested in August.”

45310. BRASSICA sp. Brassicaceæ.

Mustard.

“(No. 2444a. Ichang, Hupeh Province. March 26, 1917.) *Chieh tsü*. A mustard said to be cultivated in the mountains of Szechwan, possibly as a summer crop, but perhaps also as a winter crop. See notes under No. 2393a [S. P. I. No. 45263] for suggestions.”

45311. CITRUS sp. Rutaceæ.

“(Ichang, Hupeh Province. March 22, 1917.) *P'ing t'ou kan* (flat-head mandarin). A peculiar variety of mandarin orange, of dark orange color and medium size, with heavy, loose, warty, and corrugated rind. Segments closely adhering to each other. Bitter-sweet taste; of tonic properties apparently. Some specimens contain far more seeds than others. Said to grow around Itu, on the Yangtze River, south of Ichang.”

45312. CITRUS sp. Rutaceæ.

“(Ichang, Hupeh Province. March 27, 1917.) *P'ao kan* (spongy mandarin). A large variety of mandarin orange, often over 4 inches in diameter; skin of bright orange color, somewhat wrinkled, but not very rough. Segments small, easily separated; seeds large and many. Taste sour and bitter. The fruits keep a very long time and are used as ornaments in rooms; the heavy rind is used in flavoring spirits. Said to be grown around Peisha, southwest of Ichang, and is considered one of the hardiest of all local varieties.”

45313 and 45314. CITRUS GRANDIS (L.) Osbeck. Rutaceæ.

Pummelo.

(C. decumana Murray.)

45313. “(Ichang, Hupeh Province. March 27, 1917.) A large pummelo of somewhat conical shape.”

45314. “(Ichang, Hupeh Province. March 27, 1917.) A pummelo of medium size; shape flattened, flesh juicy, sweet, and of good flavor; contains few seeds.”

45315. CITRUS sp. Rutaceæ.

“(Ichang, Hupeh Province. March 21, 1917.) *Shih t'ou kan* (lion's head mandarin) or *Nai t'ou kan* (nipple-head mandarin). A large and heavy mandarin orange, of round-oblong shape, often with a neck close to the peduncle. Skin very warty and rough, deep orange in color; it separates very easily from the segments, which are also easily separated; seeds large, not many. Taste bitter and sour; used only medicinally by the Chinese. Said to be cultivated around Yitoo (or Itu) on the Yangtze River. About 40 different varieties of citrus fruits are said to be in cultivation in the region around Ichang; many of these are quite local products, and it seems that extensive hybridization has taken place between many species of citrus and crossing between various varieties.”

45316. ORYZA SATIVA L. Poaceæ.

Rice.

“(No. 2398a. Hankow, Hupeh Province. June 7, 1917.) *No mi ku* (sticky rice grain). A glutinous variety of rice, said to ripen early.

45263 to 45320—Continued.

It is much eaten boiled like dumplings, with sugar sprinkled over; also eaten with boiled jujubes. This is a good type of rice for making puddings. This sample is to be tested like Nos. 2396a and 2397a [S. P. I. Nos. 45266 and 45267]."

45317. HOLCUS SORGHUM L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

"(No. 2400a. Yuanan, Hupeh Province. April 3, 1917.) *Kao liang* (tall grains). The heads are used to make brooms. It is grown but sparsely, here and there, in western Hupeh. It should be tested in a region with warm, moist summers."

45318. PHASEOLUS AUREUS Roxb. Fabaceæ.

Mung bean.

"(No. 2432a. Ichang, Hupeh Province. March, 19, 1917.) Mixed strains of mung beans, grown mostly in Hupeh Province for bean-sprout production.

"In the future, bean sprouts may be much more widely eaten than they now are. In very cold and bleak regions, such as Labrador, northern Canada, northern Siberia, etc., and on sailing vessels a long time away from ports, bean sprouts from adsuki, mung, and small soy beans, together with seedlings of cress, mustard, and amaranth, are about the only fresh vegetables that can be raised. A dark, moist and warm place, like the inside of a cupboard, box, large jar, tin, etc., kept near a source of continuous, gentle heat, is necessary."

45319 and 45320. AMYGDALUS PERSICA L. Amygdalaceæ.

Peach.

(*Prunus persica* Stokes.)

45319. "(No. 2445a. Hankow, Hupeh Province. June and July, 1917.) Mixed types of Chinese peaches to be tested by specialists."

45320. "(Feicheng, Shantung Province. February 27, 1917.) Stones of various varieties for specialists."

45321 and 45322.

From Manchester, England. Seeds presented by Mr. I. Henry Watson. Received October 11, 1917.

45321. LAPEYROUSIA CRUENTA (Lindl.) Benth. Iridaceæ.

African bulbs somewhat resembling freesias, though lapeyrousias will probably never have anything like the popularity enjoyed by freesias because of their later season of bloom and lack of fragrance. *Lapeyrouisia cruenta* is probably the most popular kind, growing 6 to 10 inches high and blooming in summer and fall. The thin linear leaves, usually six, are erect from a basal tuft, 6 inches to a foot in length, and the bright carmine flowers with three darker spots at the base of the three smaller segments are an inch across. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 1821, and *Thiselton-Dyer, Flora Capensis*, vol. 6, p. 96.)

45322. LILIUM RUBELLUM Baker. Liliaceæ.

Lily.

This fine Japanese lily is nearest to *Lilium japonicum* (*L. krameri*), from which it differs by its broad speciosumlike leaves and its smaller pink flowers with obtuse segments. The bulb is quite similar to that of *L. japonicum*, but more oval in shape; the stem is 1 to 2 feet high, smooth, green, spotted and tinged with purple, and the lower part is

45321 and 45322—Continued.

bare. The leaves, usually 15 to 20, are 4 to 5 inches long and from three-fourths of an inch to an inch wide. The flowers are 3 to 4 inches long and as wide, fragrant, and of the same color variations as *L. japonicum*, with yellow or orange anthers. It blooms in June and early July. It possesses a better constitution than does *L. japonicum*, being rather more robust and permanent. (Adapted from *Gardeners' Chronicle*, May 21, 1898, p. 321, and from *Bailey, Standard Cyclopædia of Horticulture*, vol. 4, p. 1869.)

45323 to 45325. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(*T. vulgare* Vill.)

From Urumiah, Persia. Presented by Mr. Edward C. M. Richards. Received October 17, 1917. Quoted notes by Mr. Richards.

"Wheats from near the village of Bend, southwest of Urumiah."

45323. "Wheat from irrigated land."

45324. "'Dame,' or unirrigated wheat."

45325. "'Dame,' or unirrigated wheat."

45326. GOSSYPIUM OBTUSIFOLIUM Roxb. Malvaceæ. Cotton.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received October 22, 1917.

"A variety cultivated by the natives of the oases of the Sahara Desert." (*Trabut.*)

45327. ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

From Brisbane, Australia. Presented by Mr. L. G. Corrie. Received October 6, 1917.

Seeds sent in for stock purposes.

45328. CLAUCENA LANSIUM (Lour.) Skeels. Rutaceæ. Wampi.
(*C. wampi* Oliver.)

From Yeungkong, Canton, Kwangtung Province, China. Presented by W. H. Dobson, M. D., The Forman Memorial Hospital. Received October 29, 1917.

"Seeds from the largest *Wong pi* I have ever seen. The *Wong pi* is a grapelike fruit with large green seeds and evergreen leaves." (*Dobson.*)

A low spineless tree with spreading branches, spirally arranged evergreen pinnate leaves, and 4 to 5 parted small white flowers in large terminal panicles. Fruit ovoid-globose, about 1 inch long; skin glandular, pubescent; seeds green. The wampi is a native of South China, where it is commonly grown for its fruits. It is cultivated to some extent in Hawaii and California. It can be grafted on grapefruit and other species of Citrus, which makes it desirable to test it as a stock for common citrus fruits. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 786.)

For an illustration of a fruiting branch of the wampi, see Plate I.



A FRUITING BRANCH OF THE WAMPI (*CLAUCENA LANSIUM* (LOUR.) SKEELS, S. P. I. NO. 45328).

The wampi fruit is a great favorite with the Chinese, but is little known in America. It has a tart flavor a little like that of the gooseberry, but is closely allied to the citrus fruits and can be grafted on grape fruit and other citrus species. It would be desirable to give it a test as a stock for these fruits. (Photographed by Wilson Popenoe, Santa Barbara, Calif., October 30, 1914; P16224FS.)



AN INDIAN BOY HOLDING A CLUSTER OF WILD TROPICAL GRAPES (*VITIS*
TILIAEFOLIA HUMB. AND BONPL., S. P. I. NO. 45361).

The problem of producing a table grape which will grow and fruit well in the Tropics is probably one of plant breeding. The existence of this strictly tropical species of *Vitis*, which bears clusters of fruit of fair size and quality, should encourage the plant breeders to hybridize it with the larger fruited cultivated grape. The photograph is of a cluster from a vine found near Vera Cruz, Mexico, but the inventory description is of a form which, according to Wilson Popenoe, is very juicy, very sour, and contains only two seeds. It bears heavily and the fruits are of fairly good size and only need to be sweetened to be fit for table use. (Photographed by Wilson Popenoe, Puerto Mexico, Vera Cruz, June 15, 1918: P17494FS.)

45329. \times CASTANEA NEGLECTA Dode. Fagaceae.**Hybrid chestnut.**

From Madison County, Va. Presented by Mr. Daniel Grinnan, Richmond.
Received October 29, 1917.

"One of these hybrids (*Castanea pumila* \times *dentata*) was discovered some 40 years ago in Madison County, Va., on the Rapidan River. It was preserved and now stands in a pasture. The tree is quite large and vigorous, about 40 or 50 feet high, and nearly 2 feet in diameter near the ground. It bears a large crop of nuts like the chinquapin, but somewhat larger." (Grinnan.)

45330 to 45342. CASTANEA spp.

From Bell, Md. Seeds presented by Dr. W. Van Fleet. Received October 29, 1917. Quoted notes by Dr. Van Fleet; unless otherwise indicated.

45330 to 45337. CASTANEA CRENATA Sieb. and Zucc. Fagaceae. Chestnut.

45330. No. 1. "Cross within species. Third generation of variety selection. From Arlington Farm, Va."

45331. No. 12. "Cross within species. Third generation of variety selection. From Arlington Farm, Va. Same as S. P. I. No. 45330, but from a different tree."

45332. No. 1-a. "Fourth generation. Mixed lots of seed too small to be separated. Grown at Bell, Md."

45333. No. 1-d. "Mixed stock from Arlington Farm, Va. Variable in size."

45334. Bell No. 1. "Fourth generation by straight selection. Started by a variety cross between two early prolific types of *Castanea crenata*. A very large nut, with good cooking qualities, but poor eating qualities when raw. The tree has a good habit; the trunk is clean and bright, with thin handsome branches and very narrow leaves."

45335. Bell No. 2. "Fourth generation by selection. Tree about 7 feet high, with clean limbs. It is a prolific bearer. The fruit is very large and is good for cooking, but not for eating when raw. It is more bitter than S. P. I. No. 45334."

45336. Bell No. 3. "Fourth generation. Much like S. P. I. No. 45335."

45337. Bell No. 4. "Fourth generation by selection. The trees have very much the same habit as S. P. I. Nos. 45334 to 45336, and the nuts are about the same size—very large. The nuts have good eating qualities and are better than those of the numbers referred to above."

45338. CASTANEA MOLLISSIMA Blume. Fagaceae.

Chestnut.

This is the common chestnut of China. It is distributed from the neighborhood of Peking in the northeast to the extreme limits of Szechwan and Yunnan in the west and southwest. Near villages and towns, where the woody vegetation is continually cut down to furnish fuel, this chestnut is met with as a bush or a low scrub; but in the thinly populated areas it is a tree from 15 to 20 meters tall, with a trunk from 1.5 to 2 meters in girth. The nuts are a valued article of food. The Chinese name for this chestnut is Pan-li. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, p. 194.)

45330 to 45342—Continued.**45339 to 45342.** *CASTANEA PUMILA* × *CRENATA*. Fagaceæ.**Hybrid chestnut.****45339.** No. 1-b. "Mixed lot of seed for stocks. Grown at Bell, Md."**45340.** Bell No. 5. "A very attractive nut of fair quality, which looks as though it would be a good commercial nut."**45341.** Bell No. 8. "Second generation. A very prolific tree, yielding from 3 to 4 pounds of nuts this season. The tree is about 7 feet high. The nuts are of very good flavor and of good size for chinquapin, but small for chestnut."**45342.** Arlington No. 6. "Second generation. Part of a lot of 15 pounds of seed grown at Arlington Farm, Va. The nuts are 1 inch in diameter and are of good quality."**45343 to 45345.**

From Kingaroy, Queensland. Seeds presented by Mrs. R. A. Pearse through Mr. Dudley Harmon, Washington, D. C. Received October 30, 1917.

"I am sending several packages of seeds, some of which you may already have but you may get different results from these, since they are acclimatized to Queensland." (*Pearse.*)

45343. *CUCUMIS SATIVUS* L. Cucurbitaceæ.**Cucumber.***"Mammoth."***45344.** *PHASEOLUS VULGARIS* L. Fabaceæ.**Common bean.***"Zebra Runner."***45345.** *VIGNA SESQUIPEDALIS* (L.) Fruwirth. Fabaceæ. **Yard Long bean.***"Snake bean."***45346.** *CARICA PAPAYA* L. Papayaceæ.**Papaya.**

From Honolulu, Hawaii. Presented by the Hawaii Agricultural Experiment Station. Received October 29, 1917.

Selected seeds sent in for breeding work.

45347. *CORYLUS COLURNA* L. Betulaceæ.**Hazelnut.**

From Rochester, N. Y. Presented by Mr. John Dunbar, Superintendent of Parks, through Mr. C. A. Reed, of the Bureau of Plant Industry. Received October 30, 1917.

"The plants from which these nuts were obtained came from L. Späth, Berlin, Germany, 25 years ago. They began to bear fruit about 6 years ago. The trees are now about 25 feet tall. It took these nuts 2 years to germinate." (*Dunbar.*)

The tree is well worth growing for its stately form, so remarkable for a hazel, and for its curiously enveloped nuts. Native of southeastern Europe and Asia Minor; introduced to England about the middle of the seventeenth century. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 402.)

45348. HOLCUS SORGHUM L. Poaceæ.**Sorghum.***(Sorghum vulgare Pers.)*

From Johannesburg, Union of South Africa. Presented by the Agricultural Supply Association, Ltd., through Mr. J. Burt Davy, botanist. Received November 1, 1917.

"Kafir corn grown by the natives in the Vereeniging district of the Transvaal, and claimed by them to be earlier in maturing than any other sorts grown in the neighborhood. This strain may prove of immense value in areas having a short growing season. The rainfall at Vereeniging averages about 27 inches and comes almost entirely in the summer." (*Davy.*)

45349 to 45357.

From Guatemala. Collected by Mr. Wilson Jopenoe, Agricultural Explorer for the Department of Agriculture. Received November 6, 1917. Quoted notes by Mr. Popenoe.

45349. CHAMAEDOREA sp. Phœnicaceæ.**Pacayito.**

"(No. 174a. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) Seeds of the *pacayito*, of which plants have been sent in under No. 174 [S. P. I. No. 44994]. These seeds are from the garden of Doña Ines Dieseldorff, in Coban, and are from the taller, more slender, and more graceful of the two probable species included under No. 174 [S. P. I. No. 44994]."

45350. CHAYOTA EDULIS Jacq. Cucurbitaceæ.**Chayote.***(Sechium edule Swartz.)*

"(No. 181a. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) Seeds of a rather small variety but little larger than a hen's egg. It is a waxy white in color, oval or subpyriform in shape, spineless, and considered by the Guatemalans a very choice vegetable.

"This variety of güisquil or chayote from San Cristobal Vera Paz is known as *perulero*, or as *chima* in the Kekchi dialect, which is that spoken in the Alta Vera Paz region."

See notes under S. P. I. Nos. 43393 to 43401 for further data in regard to the various forms of chayotes found in Guatemala.

45351. INGA sp. Mimosaceæ.

"(No. 183a. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) *Cojiniquil*. Seeds of an indigenous species of Inga common along watercourses in Alta Vera Paz and also planted for shade in coffee plantations. The tree is medium sized, reaching about 40 feet in height, with a broad, open crown and scant foliage. The leaves are large, compound, with three to four pairs of leaflets. The fruits, which are produced in abundance during September and October, are slender pods about 6 inches in length. They contain 6 to 10 irregularly oblong, dark-green seeds, each surrounded by white, jellylike pulp of sweet, aromatic flavor, strikingly suggestive of the lychee (*Litchi chinensis*). While the quantity of pulp is not great, the flavor is really excellent, and the fruit seems to be popular among the inhabitants of the region.

"Though it is not anticipated that this fruit will become of commercial importance in the United States, the species is well worthy of trial by plant fanciers in Florida for the interest which it possesses."

45349 to 45357—Continued.

45352. *JUGLANS MOLLIS* Engelm. Juglandaceæ.

Walnut.

"(No. 180a. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) Seeds of the wild walnut of the Vera Paz region. It is not a common tree, but it is seen occasionally on mountain sides and along watercourses at altitudes of 1,500 to 4,500 feet. So far as my own observations go, the tree is only moderately large, rarely reaching a greater height than 40 to 45 feet. The nuts, which are sometimes produced very abundantly, are as large as a good specimen of *Juglans nigra*, but have a thicker shell and consequently less kernel.

"This species is of interest in connection with the attempt now being made to obtain good nut-bearing trees for the Tropics. It should be planted in such regions as southern Florida and Cuba. Since it appears to thrive in Guatemala under a rather wide range of climatic conditions, it may succeed in many parts of the Tropics and Subtropics."

45353. *LOBELIA FULGENS* Willd. Campanulaceæ.

"(No. 186a. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) Seeds of a handsome herbaceous plant commonly found along roadsides and in meadows of the region between Tactic and San Cristobal Vera Paz. It resembles the larkspur in habit, sending up a single stalk to the height of 2 or 3 feet, and producing toward the summit numerous bright scarlet-crimson flowers. These appear to be tubular at first glance, but are split along the upper surface and deeply five lobed at the mouth; three of the lobes extend downward and the remaining two upward. As the lower flowers wither and turn brown, new ones are produced at the apex of the stalk; the plant thus remains in bloom for a long period.

"The stalk and leaves are softly pubescent or pilose; the leaves are linear-lanceolate in outline, 4 to 6 inches long, one-half to three-quarters of an inch broad, entire or finely and irregularly serrate, adnate to the stem, with the margins extending down the stem some distance in the form of two prominent ridges."

45354. *PERSEA SCHIEDEANA* Nees. Lauraceæ.

Coyó.

"(No. 179a. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) Seeds of the coyó from San Cristobal Vera Paz and Tactic, both in the Department of Alta Vera Paz.

"These were taken mainly from fruits of inferior quality and are intended to serve for the production of seedling plants on which to bud or graft superior varieties of the coyó.

"Among the hundreds of coyó trees which are found throughout the Vera Paz region, an exceedingly small number produce fruits of excellent quality. Up to the present time I have found only two which seem worthy of vegetative propagation. The vast majority of trees produce small, often malformed fruits, with a large seed and fibrous flesh of poor quality and unattractive color. The best varieties, however, such as that found in the property of Padre Rivera, of Tactic, are as large as a good avocado of the West Indian race. The seed is no larger in proportion than the seed of a good budded avocado, and the flesh is creamy white, free from fiber, and of a very rich nutty flavor. If a variety like this can be established in the United States, it seems reasonable to believe that it will become popular. The fruit so strongly resembles an avocado

45349 to 45357—Continued.

in general appearance that it would not be taken by one unfamiliar with avocados for a distinct species, but the flavor is so distinct that the difference can be recognized at once.

"In general, the coyó does not seem to be nearly so productive as the avocado. Occasionally trees bear heavily, but most of them do not produce good crops. The season of ripening is much shorter than with the avocado; mature fruits will rarely hang on the tree more than six weeks, while avocados often remain three or four months. When picked and laid away to ripen, the coyó requires only three or four days to soften, while the avocado sometimes takes eight or nine days. Among the Indians of the Vera Paz region the coyó seems to be preferred to the avocado."

45355. PIMENTA sp. Myrtaceæ.

"(No. 185a. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) A small tree grown in the gardens of San Cristobal Vera Paz for its aromatic seeds, which are known as *pimienta* and are much used by the natives for seasoning. This is possibly the common allspice, *Pimenta officinalis*, but on the chance that it may be a different species a few seeds have been obtained."

45356. RUBUS URTICAEFOLIUS Poir. Rosaceæ.

"(No. 186a.) Seeds of a very interesting species of *Rubus*, which I have seen only in the Vera Paz region. It is common about Purula, Tactic, and San Cristobal, and I have seen it as far east as Sepacuite. It occurs at altitudes of approximately 3,000 to 6,000 feet. There is another wild *Rubus* in this region which is more common, but its fruits are much more seedy and of acid flavor.

"This plant sends up strong, rather stiff canes, sometimes 10 or 15 feet in length. They are covered abundantly with reddish spines, the young branchlets appearing coarsely hairy. The leaves are trifoliolate (distinguishable by this means from the other species, whose leaves are composed of five leaflets) and velvety in texture. The leaflets are ovate acuminate, about 3 inches long, and finely serrate.

"The flowers, which are rather small, are produced in large terminal racemes. The fruits are not as large as in many wild blackberries, being scarcely more than half an inch in length; but they are of delicious flavor, and the seeds are so soft that they are scarcely felt in the mouth. In this latter respect the species is a marked contrast to the others seen in Guatemala, the seeds of wild blackberries being usually very large and hard.

"The plant bears abundantly, and the sweetness of the fruits makes them very desirable for eating in the fresh state. This *Rubus* can be strongly recommended for trial in the southern United States."

45357. SOBRALIA sp. Orchidaceæ.

"(No. 187. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) Plants of a handsome terrestrial orchid found on rocky banks in the vicinity of Tucuru, Alta Vera Paz. It grows about 3 feet in height, and produces at the apex of each stalk a handsome lilac-purple flower, 2 to 3 inches in diameter. Should be tried in southern Florida."

45358 and 45359. CASTANEA ALNIFOLIA Nutt. Fagaceæ.

From Gainesville, Fla. Plants and scions collected by Mr. J. E. Morrow at the Agricultural College. Received December 10, 1917.

A low shrub, up to 2 feet in height, and forming wide patches by means of the underground stems. The nut is solitary and very small. (Adapted from *Small, Flora of the Southeastern States*, p. 347.)

To be grown for experimental purposes.

45358. An erect form.

45359. A prostrate form.

45360 and 45361.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 6, 1917. Quoted notes by Mr. Popenoe.

45360. POGONOPUS SPECIOSUS (Jacq.) Schum. Rubiaceæ.

“(No. 191. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) Cuttings of a handsome flowering shrub from the valley of the Rio Polochic, near Tucuru, Alta Vera Paz. The brilliant scarlet bracts make the plant a striking object among the vegetation along the slopes of the valley, suggesting the poinsettia in color. The plant is bushy in habit, reaching 15 feet in height, the leaves broadly lanceolate, acuminate, 3 to 5 inches long, with margins entire. The flowers are tubular, about an inch long, produced in corymbs 2 to 4 inches broad. Many of the flowers are subtended by ovate, acute bracts, 1 inch to 1½ inches in length, and of brilliant crimson-scarlet color. This species should be tested as an ornamental shrub in Florida and California.”

45361. VITIS TILIAEFOLIA Humb. and Bonpl. Vitaceæ.
(*V. caribaea* DC.)

Grape.

“(No. 182a. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) Seeds of a wild grape from the vicinity of San Cristobal Vera Paz, where it is known simply as *uva silvestre* (wild grape). Numerous inquiries have failed to bring to light any Indian name for it.

“This seems to be a different form from that sent in under S. P. I. No. 44060; at least, the fruits are much larger and of a different color.

“The plant makes slender growths, with forked tendrils and cordate subserrate leaves 3 to 4½ inches long by 3 to 3½ inches broad. The racemes are 2 to 3 inches long, and compact; the berries are three-eighths of an inch in diameter, dull or rather pale purplish maroon in color, with abundant, very acid juice and only one or two seeds. The fruits seem to be little used in the Vera Paz region as they are too sour to eat out of hand, and the Indians are not accustomed to make jelly or other products of similar nature.

“This grape impresses me as the best which I have seen in the Tropics, and its use in connection with the development of a really choice grape for tropical regions suggests itself. It bears heavily, and the fruits are of fairly good size. They need only to be made sweeter to be of value for table use.”

For an illustration showing a cluster of these grapes, see Plate II.

45362 to 45364.

From Puerto Bertoni, Paraguay. Seeds presented by Dr. Moises Bertoni. Received October 15, 1917.

45362. CYPHOMANDRA sp. Solanaceæ.

Tree-tomato.

"*Aguará-ihvá*. July, 1917. A perennial shrub, up to 50 cm. high, with large leaves and large, edible, depressed-globular fruits. Found on the plains or savannahs in this vicinity, at altitudes of 170 to 270 meters." (*Bertoni*.)

45363. SOLANUM CHACOENSE Bitter. Solanaceæ.

Potato.

"Collected July 25, 1917. A tuberous species found in stony and sandy places at the edge of woods." (*Bertoni*.)

It is related to *Solanum tuberosum* and its varieties, but is distinguished from them by having the calyx divided up to one-third of the length. The tubers are globose or subglobose, three-fifths of an inch in diameter, with thin yellowish skin. (Adapted from *Bitter*, in *Fedde Repertorium*, vol. 9, p. 115, 1911.)

45364. SOLANUM VIOLAEFOLIUM Schott. Solanaceæ.

"August, 1917. When fully ripe the fruit is edible and of excellent flavor. Found in partly shady places at altitudes of 170 to 230 meters. Used as a cover crop between coffee trees, etc." (*Bertoni*.)

45365. RUBUS GLAUCUS Benth. Rosaceæ.

Andes berry.

From Manizales, Colombia. Seeds presented by Mr. M. T. Dawe. Received October 20, 1917.

"The Andes berry is found in the highlands of tropical America from southern Mexico to Ecuador and Peru. In character of growth and foliage it is an extremely vigorous raspberry, but in fruit it more closely resembles a blackberry, since it does not 'pull off' or come away from the receptacle when ripe. The plant grows to 15 feet in height, with slender, half-trailing canes; the berries are oblong to heart-shaped, an inch long, dark maroon, soft and juicy, with small soft seeds. In flavor they resemble our loganberry, but they are somewhat sweeter and better. The plant should be tested throughout the southern and western United States." (*Wilson Popenoe*.)

45366 to 45447.

From Pretoria, Transvaal, Union of South Africa. Seeds presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Received October 15, 1917. Quoted notes by Mr. Evans.

45366. HORDEUM INTERMEDIUM CORNUTUM (Schröd.) Harlan. Poaceæ.

Barley.

"No. 18. A rust-resistant barley from Fauresmith, one of the important wheat-growing areas in the Orange Free State."

45367. SECALE CEREALE L. Poaceæ.

Rye.

"Rust-resistant rye-wheat from one of the most important wheat-growing areas in the Orange Free State."

45366 to 45447—Continued.

45368 to 45440. *TRITICUM AESTIVUM* L. Poaceæ. Wheat.
(*T. vulgare* Vill.)

Varieties of rust-resistant wheat which came chiefly from the most important wheat-growing areas in the Orange Free State.

45368. "No. 1. *Early Beard*, from Edenburg, Orange Free State."
 45369. "No. 3. *Du Toit's* wheat, from Klipfontein, P. O. Austens Poort."
 45370. "No. 4. *Australian* wheat."
 45371. "No. 5. *Klein root koren*."
 45372. "No. 6. *Defiance*, from Edenburg, Orange Free State."
 45373. "No. 7. *Beard* wheat, from 'Melkbosch.' Bethulie District."
 45374. "No. 8. *Red Egyptian*, known also as '*Stromberg rooi koren*,' from Lifton."
 45375. "No. 9. *Transvaal wolhaar*, from Tagelberg, Bethulie District."
 45376. "No. 10. *Talawair*, from Klein Zuurfontein."
 45377. "No. 11. *Cilliers* wheat, from Hammonia, Orange Free State."
 45378. "No. 12. *Wit baard koren*, from Hammonia, Orange Free State."
 45379. "No. 13. Unnamed variety, from Zastron."
 45380. "No. 14. *Colony Red* wheat, from Fauresmith."
 45381. "No. 15. *Ou baard*, late, from Klein Zuurfontein."
 45382. "No. 16. *Gluyas*, early, from Mr. F. Jooste, Rietfontein, Edenburg."
 45383. "No. 17. *Rooi kaal koren*, from Teurfontein, Fauresmith."
 45384. "No. 19. *Sibies koren*, from Fauresmith."
 45385. "No. 20. *Klein koren*, from Bethulie District."
 45386. "No. 21. *Wolhuter* wheat."
 45387. "No. 23. *Early Beard*, from Mr. F. Jooste, Rietfontein, Edenburg."
 45388. "No. 24. *Early Beard*, from Mr. F. Jooste, Rietfontein, Edenburg."
 45389. "No. 25. *Defiance*."
 45390. "No. 26. Unnamed variety, from Koffyfontein."
 45391. "No. 27. *Stromberg rooi*, from Mr. A. G. W. van der Merwe, Tagelberg, Bethulie District."
 45392. "No. 28. Unnamed variety, from Mr. J. L. Combrink, Springbokflats, Bethulie District."
 45393. "No. 29. *Early Beard*, from Mr. A. J. Grisel, Kleinzuurfontein."
 45394. "No. 30. Unnamed variety, from Mr. P. Richie."
 45395. "No. 31. *Early Beard*, from Mr. G. J. Saaiman, 'Schuins-hoogte,' Bloemfontein."
 45396. "No. 32. *Transvaal rooi wolhaar*, from Mr. P. D. Jacobs, 'Koksfontein,' Fauresmith."

45366 to 45447—Continued.

45397. "No. 33. Unnamed variety, from Koffyfontein."
45398. "No. 34. *Transvaal wolhaar*, from Messrs. de Villiers & Adams, Belgium Farm, Bethulie District."
45399. "No. 35. *Transvaal wolhaar*, from Glass Bros., Lifton."
45400. "No. 36. *Early Beard*, from Fauresmith."
45401. "No. 37. Unnamed variety, from Mr. T. J. van der Merwe, Maritzburg."
45402. "No. 38. *Early Beard*, from Mr. H. J. Joubert, Middelfontein, Bethulie District."
45403. "No. 39. *Red Egyptian*, from Messrs. de Villiers & Adams, Bethulie District."
45404. "No. 42. *Transvaal wolhaar*, from Mr. F. J. de Jonge, Zastron."
45405. "No. 43. *Early Beard*, from Mr. F. J. de Jonge, Zastron."
45406. "No. 44. *Ou baard*, from Fauresmith."
45407. "No. 45. Unnamed variety, from Fauresmith."
45408. "No. 46. *Early Gluyas*, from Fauresmith."
45409. "No. 47. Unnamed variety, from Fauresmith."
45410. "No. 48. Unnamed variety."
45411. "No. 49. Unnamed variety, from Holland, Posthumus."
45412. "No. 50. Unnamed variety."
45413. "No. 52. Unnamed variety."
45414. "No. 53. Unnamed variety."
45415. "No. 54. *Red Egyptian*, from Mr. Ferdinand Wande, Hammonia, Orange Free State."
45416. "No. 55. Unnamed variety."
45417. "No. 56. Unnamed variety."
45418. "No. 57. Unnamed variety."
45419. "No. 58. Unnamed variety."
45420. "No. 59. *Rooi wolhaar*, from Posthumus."
45421. "No. 60. *Ekstein* wheat, from Holland, Posthumus."
45422. "No. 61. Spring wheat, from Holland, Posthumus."
45423. "No. 62. *Bob's* wheat, from Mr. H. Stubbs, Corunna."
45424. "No. 63. *White Australian*, from Mr. H. Stubbs, Corunna."
45425. "No. 64. Unnamed variety."
45426. "No. 66. *Ijzerrark*, from Mr. H. J. Joubert, Middelfontein, Bethulie District."
45427. "No. 67. *Delaware*, from Mr. H. J. Joubert, Middelfontein, Bethulie District."
45428. "No. 68. *Early Beard*, from Mr. H. J. Joubert, Middelfontein, Bethulie District."
45429. "No. 69. *Primrose* wheat, from Burghersdorp."
45430. "No. 70. Early spring wheat, from Burghersdorp."
45431. "No. 71. *Bosjesveld* wheat, from Burghersdorp."
45432. "No. 73. *Early Gluyas*, from Burghersdorp."

45366 to 45447—Continued.

45433. "No. 75. *Transvaal wolhaar*, from Mr. Andries L. Lombard, Grootfontein, P. O. Dewetsdorp."

45434. "No. 76. *Transvaal wolhaar*, from Mr. G. van Tonder, waterworks, Bloemfontein."

45435. "No. 77. *Wol koren*, grown without water; from Mr. J. J. Badenhorst, Verliespan, P. O. Dewetsdorp."

45436. "No. 78. *Geluks koren*, grown without water; from Mr. M. L. Badenhorst, Klipfontein, Dewetsdorp."

45437. "No. 79. *Baard koren*, grown without water; from Mr. J. J. Badenhorst, Verliespan, P. O. Dewetsdorp."

45438. "No. 80. Early wheat, from Mr. A. L. Lombard, Grootfontein, P. O. Dewetsdorp."

45439. "No. 82. Early rust-proof wheat, from Mr. A. D. J. Taylor, 'Killarney,' Harrismith District."

45440. "No. 83. *Malan's*, a spring wheat grown in black soil; from Mr. C. J. Pieters, 'Nox,' Harrismith District."

45441 to 45446. *TRITICUM DURUM* Desf. Poaceæ. **Durum wheat.**

"Varieties of rust-resistant wheats which came chiefly from the most important wheat-growing areas in the Orange Free State."

45441. "No. 2. *Blue Beard* from Klipfontein, P. O. Austens Poort."

45442. "No. 40. Unnamed variety, from Mr. D. J. C. van Niekerk, Davidsrust, Jacobsdal."

45443. "No. 41. Unnamed variety, from Mr. W. J. Lubbe, Ramsdam, Honey Nest Kloof."

45444. "No. 65. *Bengal wheat* or *Zwaart baard*, from Mr. P. van Aardt, Broekpoort."

45445. "No. 72. *Media wheat*, from Burghersdorp."

45446. "No. 74. *Golden Ball wheat*, from Mr. W. H. Webster, Vallbank, P. O. Dewetsdorp."

45447. *TRITICUM TURGIDUM* L. Poaceæ. **Poulard wheat.**

"No. 81. *Louren's wheat*, sown in March, 1915, reaped in January, 1916. From Mr. P. J. Moolman, Beulah, Harrismith District. A rust-resistant wheat which came from one of the most important wheat-growing areas in the Orange Free State."

45448. *CUDRANIA TRICUSPIDATA* (Carr.) Bureau. Moraceæ.
(*C. triloba* Hance.)

From Augusta, Ga. Seeds presented by the P. J. Berckmans Company.
Received October 24, 1917.

"This tree is very easily propagated from suckers. The tree that we have in our nursery is about 12 feet high and about 6 feet broad. It would have been considerably larger than this but for the fact that some four years ago we headed it back to about 3½ feet from the ground. This tree had at least 1½ bushels of fruit which matured from the middle of August up to November. It is most prolific, the fruits on this one tree running up into the thousands." (Berckmans.)

The fruit much resembles in appearance a dense cluster of very large red raspberries of the strigosus type, and when fully ripe has much the flavor of

an overripe red raspberry. It has possibilities for jelly making. The numerous seeds are large, but, as considerable variation has been noted in their size, selection may ultimately reduce them sufficiently to make the fruit a popular one.

45449 to 45476.

From Soochow, China. Seeds presented by Prof. H. Gist Gee, of the Soochow University, through Dr. Yamei Kin. Received October 27, 1917. Quoted notes by Prof. Gee.

45449. *BENINCASA HISPIDA* (Thunb.) Cogn. Cucurbitaceæ. Wax gourd.
(*Benincasa cerifera* Savi.)

"*Tung kua* (tree melon)."

45450 and 45451. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon.

45450. "*Hsüeh jang hsi kua* (snow-flesh watermelon)."

45451. "*Hei p'i hsi kua* (black-skin watermelon)."

45452. *COIX LACRYMA-JOBI* MA-YUEN (Rom.) Stapf. Poaceæ. Ma-yuen.
"*Hui jên*."

45453 and 45454. *CUCUMIS MELO* L. Cucurbitaceæ.

Muskmelon.

45453. "*Sheng kua* (fresh or raw melon)."

45454. "*Niu chiao kua* (ox-horn melon)."

45455. *FAGOPYRUM VULGARE* Hill. Polygonaceæ.
(*F. esculentum* Moench.)

Buckwheat.

"*Ch'iao mai*."

45456 to 45458. *HOLCUS SORGHUM* L. Poaceæ.
(*Sorghum vulgare* Pers.)

Sorghum.

45456. "*Tang hsin lu chi*."

45458. "*Kao liang lu chi*."

45457. "*Kao liang*."

45459 to 45461. *HORDEUM VULGARE COELESTE* L. Poaceæ.

Barley.

45459. "*Hei liu shih lai mai* (black upland seasonal wheat)."

45460. "*Pai liu shih lai mai* (white upland seasonal wheat)."

45461. "*Sang chên hung lai mai* (mulberry-red wheat)."

45462 and 45463. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ.

Barley.

45462. "*Tsao ta mai* (early barley)."

45463. "*Ju ku ch'ing ta mai* (mushroom blue barley)."

45464 to 45466. *ORYZA SATIVA* L. Poaceæ.

Rice.

45464. "*Yu mang pai han tao* (awned white upland rice)."

45465. "*Wu mang hung han tao* (awnless red upland rice)."

45466. "*Wu mang pai han tao* (awnless white upland rice)."

45467. *PANICUM MILIACEUM* L. Poaceæ.

Proso.

"*Huang chi* (yellow millet)."

45468. *PISUM SATIVUM* L. Fabaceæ.

Garden pea.

"*Hsiao han* (small, cold)."

45469. *RAPHANUS SATIVUS* L. Brassicaceæ.

Radish.

"*Lo p'u*."

45449 to 45476—Continued.

45470. *SOJA MAX* (L.) Piper. Fabaceæ. **Soy bean.**
(*Glycine hispida* Maxim.)

"*Ya tou* (soy beans for sprouts)."

45471. *SPINACIA OLERACEA* L. Chenopodiaceæ. **Spinach.**

"*Po ts'ai*."

45472 and 45473. *TRITICUM AESTIVUM* L. Poaceæ. **Wheat.**
(*T. vulgare* Vill.)

45472. "*Ssü shih t'ou wu mang hsiao mai* (four-season head awnless wheat)."

45473. "*Ssü shih t'ou yu mang hsiao mai* (four-season head awned wheat)."

45474 to 45476. *VICIA FABA* L. Fabaceæ. **Broad bean.**

45474. "*Ta ch'ing ts'an tou* (large green broad bean)."

45475. "*Ch'ing ts'an tou* (green broad bean)."

45476. "*Hung ts'an tou* (red broad bean)."

45477. *BERBERIS WILSONAE* × *AGGREGATA*. Berberidaceæ.

Barberry.

From Bell, Md. Cuttings presented by Dr. W. Van Fleet. Received October 29, 1917.

"Hybrids of *Berberis wilsonae* and *B. aggregata* grown from seeds secured by pollination under glass in May, 1914. Both species are late bloomers when grown outside. *Berberis aggregata*, the pollen parent, is an upright grower with larger foliage than *B. wilsonae* and with very short flower clusters. The hybrids, however, are even more spreading in growth than *B. wilsonae*, with very thick foliage that turns deep purple at the approach of frost and holds on until midwinter. All the hybrids are quite uniform in appearance and are very handsome and hardy. Flowers and fruits have not yet appeared on these seedlings." (*Van Fleet*.)

45478. *ARECA CATECHU* L. Phœnicaceæ.

Betel-nut palm.

From Porto Rico. Seeds presented by the Agricultural Experiment Station, Mayaguez, Porto Rico. Received November 6, 1917.

This palm is grown very widely in the Tropics. When mature it forms a graceful tree 40 to 100 feet tall. The fibrous spathes and the covering of the fruits are used in packing. The seeds contain a dye and are the source of the betel nuts used so nearly universally in the East for chewing with lime and pepper leaves. In India alone, where 17 varieties are recognized, the trade in the nuts exceeds \$30,000,000 yearly. The cultivation of *Areca* is not difficult, and with a little care it can be grown in a greenhouse. The young plants are very decorative, and when old are probably the most graceful palms in cultivation. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 1, p. 387.)

45479. *INDIGOFERA* sp. Fabaceæ.

From Costa Rica. Seeds presented by Mr. George T. Carter, of Paraiso, Costa Rica, through Mr. Benjamin F. Chase, American consul, San Jose. Received November 6, 1917.

This plant, *Pico de pajaro* (bird's beak), grows wild in Costa Rica. It is commonly found growing beneath the trees in orange groves, where it forms a

bush about 3 feet high, resembling our common locust in its foliage, but having no spines. The plants are cut away at each clearing of the ground about the orange trees, but soon grow again. This plant is said to be a good producer of the nitrogen-fixing bacteria; it is said that the roots show more nodules than either clover or bean roots. (Adapted from *report of Mr. Chase, October 19, 1917.*)

45480. ALEURITES TRISPERMA Blanco. Euphorbiaceæ.

Soft lumbang.

From the Philippine Islands. Seeds presented through Mr. Adn. Hernandez, Director of Agriculture, Manila. Received November 20, 1917.

"Soft lumbang is one of the Philippine names given to this species to distinguish it from the true lumbang, *Aleurites moluccana*. It is a strictly tropical species of very limited distribution and is reported to fruit rather irregularly. The shell of the seed is much thinner and more easily broken than that of *A. moluccana*, and the oil obtained from the kernel is said to be very similar in drying properties to that of *A. fordii*, the tung-oil tree of China." (*R. A. Young.*)

45481. COLOCASIA ESCULENTA (L.) Schott. Araceæ.

Taro.

From Japan. Seeds purchased from the Yokohama Nursery Co., Yokohama. Received November 22, 1917.

"*Kinukatsugi*. A Japanese taro of the dasheen type, producing a considerable number of small cormels, or tubers. It is considered by the Japanese to be one of their finest varieties. The cormels are similar in appearance to those of other Japanese taros tested in this country; but, though small, they are of better quality." (*R. A. Young.*)

45482 to 45485.

From Porto Murtinho, Matto Grosso, Brazil. Seeds presented by Mr. C. F. Mead. Received November 5, 1917.

45482. ARACHIS HYPOGAEA L. Fabaceæ.

Peanut.

"This peanut, in Guarani called *mandui guazu*, is planted by the Indians and is customarily eaten, shell and all, after boiling. Plenty of space (2 feet square) must be allowed each plant, and the main crop will come from branches, which should be covered up from the main plant to the end, leaving the tip of each branch uncovered." (*Mead.*)

45483. ACROCOMIA TOTAI Mart. Phœnicaceæ.

Palm

"This palm, *coco cordillero* (mountain coco), was found on hills between Sapucoy and Caballero, in Paraguay. The plant is small, rarely over 1 meter in height, with fruit clustered at the base." (*Mead.*)

45484. ATTALEA GUARANITICA Barb.-Rodr. Phœnicaceæ.

Palm.

"*Coco mbocaya*, the base stock for oil, is a very valuable crop even as harvested here, and I see no reason why it should not do well in your southern sections where citrus fruits thrive." (*Mead.*)

A palm, native to tropical South America, with large, pinnate leaves and with fruits that hang in large clusters; each nut consists of three cells and contains as many seeds, a circumstance which serves to distinguish the genus from all its allies. (Adapted from *Lindley, Treasury of Botany, pt. 1, p. 109.*)

45482 to 45485—Continued.

45485. *PTEROGYNE NITENS* Tulasne. *Cæsalpiniaceæ*.

"*Ybyrá-ró*. In many ways this timber is the most useful found hereabouts, especially for hulls of boats, coach work, etc. You have no timber at all like it." (*Mead.*)

A tall, stout, unarmed tree, abundant in parts of Argentina and Brazil. The wood is very strong and resistant and is used in the construction of carts, excepting the spokes. It is considered an excellent wood in Misiones, whence it is exported. It is also highly valued in Salta and is used in coach making. (Adapted from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 57.)

45486 to 45489.

From Sao Paulo, Brazil. Seeds presented by Comte Amadeu A. Barbiellini. Received November 8, 1917.

45486. *ANNONA* sp. *Annonaceæ*.

Sent in as *Araticum ponhé* (*Annona marcgravii*), but it does not agree with other material of this number already received. It is to be grown for identification.

45487. *ANNONA CHERIMOLA* Mill. *Annonaceæ*.

Cherimoya.

A Brazilian horticultural variety of cherimoya.

45488. *STREPTOCHAETA SPICATA* Schrad. *Poaceæ*.

Grass.

A very rare South American grass, the morphology of which is not well understood. It is to be grown for the studies of the Department agrostologists.

45489. *ZORNIA DIPHYLLA GRACILIS* (DC.) Benth. *Fabaceæ*.

A tufted annual with wiry stems, lanceolate leaflets dotted with black glands, 3 to 12 flowered racemes 1 to 3 inches long, and pods with two to six densely prickly joints. It is stacked by the Foulahs for horse provender. The variety *gracilis* is a slender form of this species. Native to tropical America and Brazil. (Adapted from *Martius, Flora Brasiliensis*, vol. 15, pt. 2, p. 83, and from *Lindley, Treasury of Botany*, pt. 2, p. 1352.)

45490 to 45499.

From Montevideo, Uruguay. Seeds presented by Señor Ricardo Salgueiro Silveira, for the secretary of the Association of Agriculturists. Received November 9, 1917.

45490. *ARACHIS HYPOGAEA* L. *Fabaceæ*.

Peanut.

"*Maní Brasileira*." Said to be excellent varieties, acclimated in Uruguay.

45491. *AVENA SATIVA* L. *Poaceæ*.

Oats.

"1888." Reported as a superior variety.

45492. *HORDEUM VULGARE PALLIDUM* Seringe. *Poaceæ*.

Barley.

"1551." Said to give excellent yields.

45493. *LINUM USITATISSIMUM* L. *Linaceæ*.

Flax.

"1961." Said to be a superior form under Uruguayan conditions.

45494 and 45495. *MEDICAGO SATIVA* L. *Fabaceæ*.

Alfalfa.

Two lots sent in as Argentine and Peruvian strains, but not distinguished in any way.

45494. Alfalfa "1697."

45495. Alfalfa "1994."

45490 to 45499—Continued.

45496. *PHALARIS CANARIENSIS* L. Poaceæ. **Canary grass.**

Said to be a heavy-yielding variety.

45497. *RICINUS COMMUNIS* L. Euphorbiaceæ. **Castor-bean.**

Reported to be an excellent variety as grown in Uruguay.

45498 and 45499. *ZEA MAYS* L. Poaceæ. **Corn.**

Two lots of corn received as common maize and Cuarenteno maize, but not distinguished in any way.

45498. Corn "1898."

45499. Corn "1645."

45500. *JUNIPERUS CEDRUS* Webb. Pinaceæ. **Juniper.**

From Teneriffe, Canary Islands. Seeds presented by Dr. George V. Perez, Santa Ursula, through the Forest Service, United States Department of Agriculture. Received February 2, 1917.

"No. 1. From Palma, one of the Canary Island group." (*Perez.*)

"It is native to the Canary Islands, where it ascends the mountains to a height of 7,000 to 9,000 feet, sometimes attaining a large size. Dr. G. V. Perez, of Teneriffe, considers it might be planted with advantage under forest conditions for its timber." (*Irish Gardening, Feb. 17, 1917.*)

For previous introduction, see S. P. I. No. 41463.

45501. *PHASEOLUS ACUTIFOLIUS LATIFOLIUS* G. F. Freeman. Fabaceæ. **Tepary bean.**

From Lakeside, Calif. Seeds presented by Mr. R. B. Kanady. Received November 2, 1917.

"This bean yields heavily and has been found to be excellent for canning. The quality is fine and the bean swells in cooking more than any other that we have tried. It should be tested in a bean-growing section, as it may prove a valuable addition to the list of varieties already widely used." (*Kanady.*)

45502. *DROSOPHYLLUM LUSITANICUM* (L.) Link. Droseraceæ.

From Edinburgh, Scotland. Seeds presented by the Royal Botanic Garden, through Prof. Isaac Bailey Balfour. Received November 12, 1917.

An interesting insectivorous plant from Europe. This is a subshrubby plant, with a simple stem, 2 to 6 inches high, bearing at the top long, linear glandular leaves. It is an interesting fact that these leaves are revolute, rather than involute, as in the *Droseras* and other such plants. The bright-yellow flowers, about 1½ inches across, are borne on a stalk about a foot high. The glands on the leaves are purple, some stalked and some sessile, viscid, and not motile as in *Drosera*. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 2, p. 1077.*)

45503. *DIOSPYROS KAKI* L. f. Diospyraceæ. **Kaki.**

From Felton, Del. Scions collected by Mr. Peter Bisset on the property of Mr. J. W. Killen. Received November 14, 1917.

"This tree has lived through several winters at Felton, Del. This type of persimmon, as is well known, is rather susceptible to low temperatures, and a tree which has stood the winter of Delaware should receive the attention of growers." (*Bisset.*)

45504. CASTANOSPERMUM AUSTRALE Cunn. and Fraser. Fabaceæ.
Moreton Bay chestnut.

From Dominica. British West Indies. Seeds presented by the Botanic Garden through the curator, Mr. Joseph Jones. Received November 16, 1917.

The *Moreton Bay* chestnut is a large ornamental leguminous tree, native to Queensland and New South Wales, where it is said to grow abundantly along rivers. The large evergreen leaves and the racemes of bright orange-yellow flowers make an attractive picture in any subtropical garden. The pod, 8 to 9 inches long, bears four to five globular seeds larger than Italian chestnuts. These seeds are roasted and eaten like chestnuts. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 688, and *Gardeners' Chronicle*, 3d ser., vol. 38, p. 244.)

45505 and 45506.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 17, 1917.

45505. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
 (*P. gratissima* Gaertn. f.)

"(No. 195. Avocado No. 32. City of Guatemala, Guatemala. November 6, 1917.) *Akbal*. This is a variety noteworthy for earliness, and bud wood has been included in the set primarily for this characteristic. It is, however, of very good quality and has no visible defects except a somewhat undesirable shape. Judging by its behavior in Guatemala, it should be the earliest variety in the collection, but it is not safe to depend upon its retaining this characteristic in the United States, since slight local variations in soil or climate sometimes affect the time of ripening very noticeably and its earliness may not be altogether an inherent characteristic.

"The parent tree is growing in the grounds of Eulogio Duarte, near Amatitlan. The location is known as Los Rastrojos and is about 2 miles from the plaza of Amatitlan, on the road which leads past the cemetery toward the hills. The altitude is approximately 4,200 feet. The tree is about 40 feet high, spreading but of compact growth, the crown being fairly dense. The trunk is about 20 inches thick at the base, and it branches 10 feet from the ground. According to the owner, the tree is 6 years old, but to judge from its size it can not be less than 20. It seems to be vigorous and in good condition. The bud wood which it yields is fairly satisfactory, the growths being well formed though not very stout, while the eyes are vigorous and do not drop quickly.

"This is a rather warm region; hence, there is nothing to indicate that the variety will be unusually hardy.

"The crop harvested in the fall of 1917 was a good one. According to the owner, it was 600 fruits, but it seems probable that it was considerably more. The bearing habit of the tree gives promise of being very satisfactory. The flowering season is in November and December, and the fruit ripens from the following August to November. It is fully ripe and in perfect condition for picking by the middle of October, whereas the average variety of the same region is not mature until January at the earliest.

"In two characteristics this variety does not seem to agree with the Guatemalan race. It has a thin skin, and the seed coats do not adhere

45505 and 45506—Continued.

closely to the cotyledons. A few other varieties showing these same characteristics were seen in the same locality, and it is possible that they may not be true Guatemalan avocados, though in most respects they appear to belong to this race.

"In form the fruit is long and slender, sometimes slightly curved, and sometimes becoming pyriform. It is medium sized, weighing about 12 ounces. The surface is smooth and deep green in color. The skin is thin and surrounds deep-yellow flesh of good quality, without fiber or discoloration. The seed is medium sized, and while it never rattles in its cavity it does not fit as snugly as in nearly all other Guatemalan varieties.

"A formal description of this variety is as follows:

"Form elongated to slender pyriform, sometimes curved; size medium, weight 12 ounces, length $5\frac{1}{2}$ to $6\frac{1}{2}$ inches, greatest breadth $2\frac{1}{4}$ to 3 inches; base narrow, rounded, the short, stout stem (2 to 3 inches long) inserted obliquely; apex quite smooth, uniformly bright green in color, with very numerous minute yellowish dots; skin very thin, less than one-sixteenth of an inch, but firm and tough; flesh rich yellow near the seed cavity, changing to light green near the skin, firm, of fine texture, free from fiber, and of rich, nutty flavor; quality very good; seed medium sized, weighing about $1\frac{1}{2}$ ounces, conical to slender conical in form, the cotyledons smooth, with the seed coats adhering loosely." (Popenoe.)

45506. MALPIGHIA sp. Malpighiaceæ.

"(No. 196. City of Guatemala, Guatemala. November 6, 1917.) Cuttings of *azerola*, from Amatitlan (altitude 3,900 feet). The name *azerola*, which properly belongs to species of *Crataegus*, is applied, in central Guatemala, to a large *Malpighia* the fruits of which are not unlike those of the Barbados cherry (*Malpighia edulis*). I have seen the plant only in a few places; it is most abundant at Amatitlan, where it is seen in a large proportion of the gardens and dooryards.

"This species is much larger than *M. edulis*, often becoming a small bushy tree 20 feet in height, but more commonly seen as a large shrub, spreading in habit, with a dense crown. When young, the leaves are covered with a thick whitish tomentum; when mature, they are membranaceous, elliptic-acuminate in form, about 4 inches long, cuneate at the base, bright green and glabrous above, heavily pubescent with the venation prominent below. The flowers are produced in small axillary clusters. Individually, they are scarcely an inch broad, with clawed crapelike petals of lilac-pink color. The fruits, which ripen mainly during August and September, are the size of a large cherry, but flattened and sometimes pointed toward the apex. They are bright red when fully ripe, with a tender skin and juicy, whitish flesh of peculiar sub-acid flavor. The seeds, three in number, are roughly winged. The character of the growth suggests that this plant may be slightly hardy. It has not been seen in the lowlands, but is grown at altitudes of 4,000 to 5,000 feet where the climate is comparatively cool, but not cold enough to experience severe frosts. The plants produce abundantly. While not a fruit likely to become of great importance in the United States, it possesses sufficient interest and value to merit a trial. The regions in which it seems likely to succeed are Florida, southern Texas, and California." (Popenoe.)

45507. CASTANEA CRENATA Sieb. and Zucc. Fagaceæ.**Japanese chestnut.**

From Felton, Del. Seeds purchased from Mr. J. W. Killen. Received November 16, 1917.

"Seeds to be grown as stock on which to graft Chinese chestnuts and also Dr. Van Fleet's selected hybrids. The trees from which these nuts were gathered were interplanted about 20 years ago with American chestnuts, which have all been killed by the chestnut bark disease, while the Japanese trees are still thriving and bearing excellent crops of nuts. The blight has attacked some of the branches of the Japanese trees, but has not proved serious." (*Peter Bisset.*)

45508 and 45509.

From Paraguay. Seeds presented by Mr. Thomas R. Gwynn, Concepcion. Received November 19, 1917.

45508. CECROPIA ADENOPUS Martius. Moraceæ.

A tall tree which grows on river banks, both on the mainland and on the islands. The large leaves are whitish beneath, rough, and give the tree its name of *Palo de lija* (sharkskin wood). The leaves are considered a remedy for coughs. It is native to Misiones, Corrientes, Chaco, Formosa, and northern Argentina. (Adapted from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 63.)

45509. DIOCLEA REFLEXA Hook. f. Fabaceæ.

A climbing shrub, called in Paraguay *Liana de flores moradas*, with beautiful reddish purple flowers. It may be distinguished from the related *Dioclea violacea*, which has straight, erect, violet-colored bracts, by its reflexed, reddish bracts. (Adapted from *Hooker, Niger Flora*, p. 306.)

45510. CAJUPUTI LEUCADENDRA (Stickm.) Rusby. Myrtaceæ.

(*Melaleuca leucadendron* L.)

Cajuput tree.

From Madagascar. Seeds presented by Mr. E. Jaeglé, director, Agricultural Station of Ivoloïna, through Mr. James G. Carter, American consul, Tamatave. Received March 31, 1917.

"The wood of this tree shows a most beautiful combination of light and darker shades, which may be compared in appearance to ripple marks. It is hard, heavy, and close grained, excellent for shipbuilding and for posts in damp ground; it is said to be imperishable under ground. The papery bark also is worthy of notice for its great durability and for being impervious to water, instances being known where it has been used for dam and drainage purposes in conjunction with timber, and it has been found that the bark was quite sound although the timber was decayed." (*Maiden, Useful Native Plants of Australia*, p. 569.)

45511. RICINUS COMMUNIS L. Euphorbiaceæ.**Castor-bean.**

From Montevideo, Uruguay. Seeds presented by Señor Ricardo Salgueiro Silveira, for the secretary of the Association of Agriculturists. Received November 22, 1917.

Received as *Ricinus sanguinalis* which is considered a horticultural form of *R. communis*.

45512. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. Citron.

From Bell, Md. Presented by Dr. W. Van Fleet. Received November 22, 1917.

"A preserving citron, 6 to 8 inches long and 3 to 4 inches in diameter. Skin green and smooth; flesh white and solid; seed in green fruit soft. May prove valuable for marmalades and preserves, also for cooking with fish or meat." (B. T. Galloway.)

45513 to 45522. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Mauritius. Presented by Mr. H. A. Tampany, Director of Agriculture, Reduit, Mauritius. Received November 20, 1917.

45513 and 45514. "Var. *M. P. 55*. Foliage broad, canes stout and tall, inclined to trail, 10 to a stool; internodes cylindrical, rather long, dark purple with waxy coating, no channel; eye bud rather large, broad, and slightly bulging at base, apex flat and adhering." (*Tampany.*)

A widely grown variety, exceeded only by *White Tanna* in area under cultivation in Mauritius. Of all the land devoted to sugar-cane raising 12 per cent is occupied by this variety. In Mauritius this variety seems to prefer the lowlands, two-thirds of the area devoted to it being below 600 feet in altitude. The origin of this variety is traced to Mr. G. Perromat, manager of the Clemencia estate, Flacq, who began to grow canes from seed in 1891. *M. P. 55* is the best of the varieties he succeeded in raising. (Adapted from *Henri Robert, Sugar-Cane Varieties in Mauritius.*)

45513. "Cuttings."

45514. "Seeds."

45515. "Cuttings of *M. P. 131*. Foliage narrow; canes tall, inclined to trail, of medium size, 10 to 15 to a stool; internodes zigzag, of medium length, dark violet, slightly waxy, the channel slightly marked in some cases, apparent in others; eye bud broad, pentagonal, flat, base straight, sides perpendicular, apex adhering." (*Tampany.*)

A variety of minor importance on the island of Mauritius, occupying only a small part of the land devoted to sugar cane. It is a variety which prefers the lowlands, most of it being grown below 600 feet altitude. This is one of the varieties grown from seed by Mr. G. Perromat, manager of the Clemencia estate, Flacq. It ranks second in value of all the varieties that he originated. (Adapted from *Henri Robert, Sugar-Cane Varieties in Mauritius.*)

45516. "Cuttings of *M. 1237*. Foliage rather broad; canes erect, rather tall, of medium size, 10 to 12 to a stool; internodes straight, of medium length; reddish purple, waxy, the channel deeply marked, running almost the entire length of the internode; eye bud of medium size, pentagonal, bulging at the center, apex adhering." (*Tampany.*)

45517 and 45518. "*D. K. 74*. Foliage broad; canes medium in size, fairly tall, inclined to trail, 11 to a stool; internodes cylindrical, of medium size, yellow, sunburns red, no channel; eye bud of medium size, triangular, slightly bulging at base, apex not quite adhering." (*Tampany.*)

A variety of minor importance on the island of Mauritius. It occupies 5.48 per cent of the land devoted to sugar-cane raising. It is a

45513 to 45522—Continued.

variety which grows best on the lowlands, almost all of it being grown below 600 feet in altitude. This variety was introduced in 1905 by the Forest Department of Mauritius, from Barbadoes. Through an error at the time of introduction, this variety has been given the wrong name. It has been found that this is the well-known Demerara seedling properly known as *D.74*. (Adapted from *Henri Robert, Sugar-Cane Varieties in Mauritius*.)

45517. "Cuttings."

45518. "Seeds."

45519 and 45520. "White Tanna. Foliage broad; canes rather stout, erect, medium height, 10 to a stool; internodes cylindrical, greenish red with characteristic cracks, medium size and height, no channel; eye bud of medium size, flat, circular, apex not quite adhering." (*Tampany*.)

This is the widest grown of all the sugar-cane varieties on the island of Mauritius, occupying 47 per cent of all the land given over to sugar-cane raising. It is a variety which is grown equally well on the highlands or lowlands. There are two sources from which this variety came: It arose as a sport on several estates of the colony, and has since been widely cultivated; it was also received from the Department of Agriculture of New South Wales in 1895. The present variety is probably descended in part from each of the sources mentioned above. (Adapted from *Henri Robert, Sugar-Cane Varieties in Mauritius*.)

45519. "Cuttings."

45520. "Seeds."

45521. "Cuttings of 1680⁴. Foliage broad; canes stout, medium height, inclined to trail, seven to a stool; internodes cylindrical, purple-black, rather short, slightly channeled; eye bud of medium size, slightly bulging, base about twice as long as the distance of the apex from the base." (*Tampany*.)

45522. "Cuttings of Striped Tanna. Foliage broad; canes very stout and fairly tall, very erect, eight to a stool; internodes cylindrical, rather short, reddish black with light-red stripes and characteristic cracks, no channel; eye bud of medium size, bulging and prominent, apex blunt." (*Tampany*.)

Of all the land used for raising sugar cane in Mauritius, 8.76 per cent is devoted to the growing of this variety. It stands third in importance on the island of Mauritius, being exceeded in area planted only by the varieties *White Tanna* and *M. P. 55*. This variety will grow on high or low land, as much being grown about 600 feet as below. The *Striped Tanna* was received from Queensland in 1890. (Adapted from *Henri Robert, Sugar-Cane Varieties in Mauritius*.)

45523. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ.**Japanese apricot.**

From Yokohama, Japan. Seeds purchased from the Yokohama Nursery Co. Received November 28, 1917.

A tree with somewhat the appearance of the common apricot, but with greenish or gray bark and duller foliage. The leaves are relatively small, long pointed, light colored beneath; and the fragrant flowers are sessile or nearly so. Various forms (such as the white, double white, double rose, and weeping) are in cultivation. The double-flowered form is especially valuable in gardens for its early and profuse blooming.

The fruit is about an inch in diameter and is used in Japan as a pickle. The fruits are picked just before becoming ripe and soaked in water for 24 hours; then they are mixed with salt and the leaves of the red-leaved variety of *Perilla nankinensis* and allowed to stand a week or less, depending on the temperature. After this, the fruits are spread in the sun to dry and while drying are sprinkled with the juice of the *Perilla* leaves. After three to five days they are put up in weak brine, in which they will keep indefinitely. The pickled fruit is exceedingly sour; it often forms a part of the ration of the Japanese soldiers. For best results the trees should be grown in a shady place. (Adapted from notes of Frank N. Meyer.)

45524. *CHENOPODIUM AMBROSIoidES* L. Chenopodiaceæ.

From India. Seeds presented by Mr. H. G. Carter, director, Botanical Survey of India, Calcutta. Received November 28, 1917.

"Obtained from plants grown near Calcutta." (Carter.)

Especially developed strains are said to afford a high percentage of an essential oil, to which tonic and antispasmodic properties are attributed. In Europe it has a reputation as a useful remedy in nervous affections, particularly chorea. (Adapted from *The National Dispensatory*, p. 1067.)

45525 to 45534.

From Hupeh Province, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received November 21, 1917. Quoted notes by Mr. Meyer.

45525 and 45526. *LYCORIS AUREA* (L'Her.) Herbert. Amaryllidaceæ.

45525. "(No. 1283. Chienchingshan, near Kingmen. September 21, 1917.) Seeds of a bulbous plant, flowering in late summer, with large ocher-yellow flowers borne on stems often over 2 feet tall. The foliage dies down in summer, but comes up again in early spring or late winter where the climate is mild. Apparently withstands zero temperatures. Collected in pockets of humus soil beneath tall trees on a rocky, mountain slope at an altitude of more than 2,000 feet above sea level. May possibly be hardy at Washington, D. C."

45526. "Bulbs of No. 1283 [S. P. I. No. 45525]."

45527 and 45528. *LYCORIS RADIATA* (L'Her.) Herbert. Amaryllidaceæ.

45527. "(No. 1284. Kingmen. September 26, 1917.) Bulbs of a plant, with large masses of carmine-red flowers, which flowers in late summer and early autumn. The foliage dies down in spring, but the leaves sprout up again after flowering has ceased. It loves partial shade, does well on dry banks, débris, and beneath trees, but seems to withstand less frost than the preceding number. This ought to thrive throughout the whole southern United States, and possibly in California. Chinese name *Lung chiao hua* (dragon's-claw flower.) Obtained from the garden of Rev. J. S. Johnson, Swedish American Missionary at Kingmen."

45528. "(No. 1285. Kingmen. September 26, 1917.) Var. *flavescens*. Bulbs of a dragon lily, with pale-yellow flowers borne on stalks considerably taller than those of the preceding number [S. P. I. No. 45527], of which it seems to be a variety. This and the three preceding numbers [S. P. I. Nos. 45525 to 45527] can

45525 to 45534—Continued.

possibly be grown for cut flowers in greenhouses in the northern United States, while in the South they might even become weeds, as they are here and there in central China. They also deserve to be taken in hand by plant breeders, for they certainly are amenable to selection and possibly to hybridization, and they seem to suffer from very few natural enemies."

45529 to 45531. *BRASSICA PEKINENSIS* (Lour.) Gagn. Brassicaceæ.

Pai ts'ai.

45529. "(No. 2449a. Kingmen. September 13, 1917.) *Tung pai ts'ai* (winter white vegetable). A variety of *pai ts'ai*, said to grow into large solid heads when planted in the fall and given sufficient space in rich, moist soil. When sown thickly in beds in spring or fall and not transplanted, it is pulled up with the roots and eaten, chopped up and boiled like spinach. Can also be employed in sauerkraut making. To be tested especially in the southern sections of the United States."

45530. "(No. 2450a. Kingmen. September 13, 1917.) *Hei pai ts'ai* (black-white vegetable). A variety of *pai ts'ai* with very dark green, bullate foliage, not making a closed head. Sown in the fall and transplanted at distances of half a foot or more in all directions. It needs a moist, muck soil to grow to perfection, and in mild climates it keeps on growing throughout the whole winter. It is eaten in soups, chopped up like spinach. To be tested mainly in the southern United States."

45531. "(No. 2451a. Kingmen. September 14 and 15, 1917.) A variety of *pai ts'ai*, said to resemble No. 2449a [S. P. I. No. 45529] in most ways; but it grows taller and larger. It is cultivated in the same manner. Chinese name *Hsiangyang pai ts'ai*, apparently denoting that this variety originally came from the city of Hsiangyang, 100 miles north of Kingmen."

45532. *AESCULUS WILSONII* Rehder. Æsculaceæ.

Horse-chestnut.

"(No. 2452a. Kingmen. September 24, 1917.) *So lo shu*. The interesting and beautiful Chinese horse-chestnut, a tree deserving to become widely planted in the southern United States. Not as charming as the European horse-chestnut, but better able to withstand hot summers and long periods of drought. To be planted in those sections of the United States where temperatures do not fall much below zero."

For an illustration showing this horse-chestnut in its native habitat, see Plate III.

45533. *ALLIUM* sp. Liliaceæ.

Onion.

"(No. 143b. Anlu. August 28, 1917.) Bulbs of a small onion, pickled in vinegar and used as a relish with meals; said to promote good health and to aid the digestion."

45534. *CITRUS ICHANGENSIS* Swingle. Rutaceæ.

Ichang lemon.

"(No. 145b. Kingmen. September 26, 1917.) Fruits of a citrus species called *Hsiang yuan* (fragrant, round). It exists in many varieties and is able to withstand colder temperatures than the tangerine and kumquat, but is not as hardy as *Poncirus trifoliata* (*Citrus trifoliata*). The rind exhales a delightful fragrance, and the Chinese use the fruits



THE CHINESE HORSE-CHESTNUT IN ITS NATIVE HABITAT. (*AESCULUS WILSONII* REHDER, S. P. I. No. 45532).

Although Frank N. Meyer, the agricultural explorer, did not find this tree so charming as the European horse-chestnut, he predicted that it would prove better able to withstand hot summers and long periods of drought. It has narrower leaves which do not appear to be whipped by the wind so easily as do those of the European species. Specimens are growing near Seattle and promise to be successful there, but it deserves a trial in the parks of the eastern United States. (Tree 80 feet high, in flower, photographed (No. 96) by E. H. Wilson, Hsinwenping, Szechwan, China, June 1, 1908.)



THE SWEET GRANADILLA OF GUATEMALA. (*PASSIFLORA LIGULARIS* JUSS., S. P. I. No. 45614).

One of the best of the granadillas. According to Mr. Wilson Popenoe, this plant grows in parts of Guatemala apparently too cold for the avocado. It is strikingly different from the common species (*P. edulis*), which is grown in California and cultivated extensively in Australia, being orange-yellow instead of dull purple in color, with a rind so hard that it does not wrinkle but protects the fruit, so that it is transported as much as a hundred miles over the mountains by native carriers. It brings relatively high prices on the markets. The aroma of the fruit is delightful, and the flavor is not so acid as that of other species. It deserves to be grown and crossed with *P. edulis* and with the sour maypop (*P. incarnata*), which is hardy as far north as Washington, D. C. (Photographed by Wilson Popenoe, San Lorenzo del Cubo, Guatemala, October 19, 1916; P16825FS.)

45525 to 45534—Continued.

as room perfumers and carry them about instead of a perfumed handkerchief. Since they possess an abundant juice of good quality, foreign residents use these fruits for making lemonade. If it were not for the many very large seeds, this fruit could well be substituted for the ordinary lemon; as it is, it may be grown considerably north of the true citrus belt to supply a home product from which to make refreshing drinks."

45535 and 45536.

From Mexico. Seeds presented by Mrs. Zelia Nuttall, Casa Alvarado, Coyacan, City of Mexico. Received December 5, 1917.

45535. AMARANTHUS PANICULATUS L. Amaranthaceæ. Huauhtli.

An annual, with entire leaves, bearing the abundant grainlike edible seeds in dense panicles. Some plants produce white seeds, and some produce black. The white seeds are those chiefly used by the natives. This plant is found both in cultivation and growing wild. The seeds are ground and cooked in the form of small cakes known as "alegría," these cakes being eaten in large quantities by the poorer classes, especially during a time of scarcity of corn. This plant was cultivated by the Aztecs before the discovery of America. It occupied an important place in the fare of the people, and accounts show that every year 18 granaries, each with a capacity of 9,000 bushels, were filled by Montezuma. Often the tribute exacted by the Aztecs from the people they conquered would take the form of a certain quantity of this grain. It was so closely connected with the life of the people that it figured in religious observances. Spanish historians, writing in the first half of the seventeenth century, give accounts of how the ancient Mexicans made figures of their gods out of the flour obtained from the seed. The figures were carried in processions, and at the end of the ceremony were broken up and served to the people as a form of communion. (Adapted from *Safford, Proceedings International Congress of Americanists*, p. 286, 1917.)

45536. CHENOPODIUM NUTTALLIAE Safford. Chenopodiaceæ.

Huauhtzontli.

"Huauhtzontli combines the properties of a cereal and a vegetable, and furnishes a substantial meal. When fresh and the seeds are 'in milk,' the food is, to me, delicious. I am told that it is almost as good when prepared from the dried inflorescence." (*Mrs. Nuttall.*)

45537 to 45539.

From Panama, Republic of Panama. Seeds presented by Señor Ramon Arias Féraud. Received November 30, 1917.

45537 and 45538. CARICA PAPAYA L. Papayaceæ. Papaya.

"A fine oblong papaya, with tapering ends, about 12 to 18 inches long and 5 to 6 inches in diameter." (*Arias Féraud.*)

45537. Male.

45538. Female.

45539. CUCURBITA PEPO L. Cucurbitaceæ. Squash.

"An edible squash, which, when well mashed and mixed with olive oil and vinegar, makes a splendid salad." (*Arias Féraud.*)

45540 to 45553.

From the city of Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 24, 1917. Quoted notes by Mr. Popenoe.

45540 to 45546. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.
(*Secchium edule* Swartz.)

45540. "(No. 197a. November 7, 1917.) *Güisquil de Santa Maria*. Locally considered one of the very best varieties. It is a short, broad fruit, compressed on the sides, and weighing 12 ounces to a pound. The surface is smooth, free from corrugations, and pale to bright green in color. Green-fruited *güisquiles* are considered by the Guatemalans to have more flavor than the white-fruited varieties.

"All smooth, small to medium-sized *güisquiles* are called *peruleros*; the spiny or rough fruits are termed simply *güisquil* in most instances. Occasionally they have distinguishing names, such as *güisquil de Santa Maria*."

45541. "(No. 198a. November 7, 1917.) Large white *perulero*. Probably the best of the *perulero güisquiles*. A pear-shaped, waxy white fruit without prickles and with a surface free from wrinkles or corrugations. Weight about 5 ounces. One of the rarest varieties in the market."

45542. "(No. 199a. November 7, 1917.) *Güisquil de Santa Maria*. A large form similar to No. 197a [S. P. I. No. 45540], but somewhat more prickly. It is considered a very good variety. For cultivation in the United States, however, varieties without prickles seem preferable, as they are more attractive in appearance and easier to handle. In Guatemala a large proportion of *güisquiles* are prickly, but the presence of the prickles does not seem to make any difference to the natives when purchasing the fruits in the market."

45543. "(No. 200a. November 7, 1917.) Large pale-green *perulero*. A pear-shaped fruit about 8 ounces in weight, with a smooth surface pale green in color. Somewhat larger than the large white *perulero*, No. 198a [S. P. I. No. 45541], but said to be slightly inferior in flavor."

45544. "(No. 201a. November 7, 1917.) Small white *perulero*. A popular *güisquil*, considered of good quality. It is pear shaped, 2 to 3 ounces in weight, waxy white in color, with a smooth surface free from spines."

45545. "(No. 202a. November 7, 1917.) Small pale-green *perulero*. Practically identical with the small white *perulero*, No. 201a [S. P. I. No. 45544], except in the color, which is pale waxy green."

45546. "(No. 203a. November 7, 1917.) Small green *perulero*. A common variety in the markets, and apparently a favorite. Nearly round in form, about 2 ounces in weight, with a smooth surface deep green in color. Almost a miniature *güisquil de Santa Maria* No. 197a [S. P. I. No. 45540]."

45547. SOBRALIA MACRANTHA Lindl. Orchidaceæ.

"(No. 204a. November 7, 1917.) A terrestrial orchid found in the vicinity of the city of Guatemala, at altitudes of 4,000 to 5,000 feet. The

45540 to 45553—Continued.

plants sent under this number are from the barranca near Chinautla, a few miles north of the city.

"The fact that this handsome species grows in a cool climate suggests that it may be sufficiently hardy for open-air culture in California and Florida. Here in Guatemala it is often planted in gardens, where, during October, it makes a fine showing with its large flowers. The plant sends up several stems 3 to 4 feet in height. At the summit of each, two or three flowers are produced, only one opening at a time. In size and color the flowers resemble some of the fine cattleyas; they are 2 to 3 inches broad, deep lilac in color, deepening to lilac purple in the throat."

45548. *ANNONA DIVERSIFOLIA* Safford. Annonaceæ.

Ilama.

"(No. 205a. November 8, 1917.) The *anona blanca*, from Chiquimula (altitude 1,400 feet).

"This species is not known in the highlands of Guatemala, nor have I seen it elsewhere except in the vicinity of Chiquimula and Jocotan, both in the southeastern part of the republic, close to the border of Honduras.

"The tree strongly suggests *Annona squamosa* in appearance, but is easily distinguished by the leaflike bracts at the bases of the branchlets. The fruit is much larger than that of *A. squamosa*, resembling more closely that of *A. reticulata*. It is generally heart shaped, up to 5 or 6 inches in length, with the carpellary areas indicated by incised lines on the surface, which is pale glaucous green in color. The skin is nearly a quarter of an inch thick, the flesh is said to be tinged rose color when ripe, and the seeds are much larger than those of either *A. squamosa* or *A. reticulata*. The season of ripening in southeastern Guatemala is September.

"While I have not been able to test this fruit thoroughly, it seems to be far superior to *A. reticulata* and to approach the cherimoya in quality. If it succeeds at low altitudes in the Tropics, as seems to be the case, it may prove to be a valuable species for cultivation in regions which are too hot for the cherimoya. It should certainly be given a careful trial in such regions as southern Florida, Cuba, and Porto Rico. I do not know how productive the tree may be, since I have seen only two specimens in fruit, and these were growing under rather unfavorable conditions.

"The seeds forwarded under this number were taken from fruits purchased in the market of Chiquimula by Mr. B. B. Williams, of the Friends' Mission."

45549. *CRANIOLARIA ANNUA* L. Martyniaceæ.

"(No. 206a. November 8, 1917.) *Uña de gato* (cat's-claw). A large herbaceous annual, common in central and eastern Guatemala at altitudes of about 2,000 feet. The seeds forwarded under this number came from the valley of the Rio Motagua near La Canoa, on the Guatemala-Coban trail.

"The plant grows about 4 feet high, with large, soft leaves. It produces along the stem numerous gloxinialike flowers, white in color, with a purplish blotch in the throat."

45550. (Undetermined.)

"(No. 207a. November 8, 1917.) Seeds of a small, flowering tree from the mountains of Baja Vera Paz, between Salama and Purula. I have

45540 to 45553—Continued.

seen it cultivated in Antigua and am told that it occurs wild in that region as well.

"The wild trees, which grow on rocky, rather dry slopes, reach 20 feet in height. In April and May they produce numerous flowers 2 inches in diameter, white upon first opening, but later becoming bright pink. When in full bloom the tree is very decorative in appearance and worthy of a trial in the warmest sections of the United States."

45551. (Undetermined.)

"(No. 208a. November 8, 1917.) A flowering vine from the summit of the Cachil Mountains, north of Salama, Baja Vera Paz; altitude 5,250 feet.

"This plant is occasionally seen climbing over shrubs and small trees. It does not make very luxuriant growth, but produces clusters of small red flowers which are very attractive. The flowers are followed by winged seed capsules. For trial in California and Florida."

45552. GLIRICIDIA MEISTOPHYLLA (Donn. Sm.) Pittier. Fabaceæ.

"(No. 209a. November 8, 1917.) Seeds of a leguminous shrub from the mountains of northern Baja Vera Paz."

45553. PERSEA AMERICANA Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

"Avocado seeds to be grown for stocks."

45554 to 45557.

From Buitenzorg, Java. Seeds presented by the director of the Botanic Gardens. Received November 30, 1917.

45554. PAVETTA ZIMMERMANNIANA Valet. Rubiaceæ.

A small rubiaceous tree or shrub, with opposite, nearly elliptic leaves and clusters of small, slender-tubed white flowers.

"The remarkable researches of Zimmermann and Faber detailed in the *Jahrbücher für Wissenschaftliche Botanik*, vol. 51, p. 285, 1912, and vol. 54, p. 243, 1914, make this species of unusual interest. Faber has proved that the leaves of this and of several other species of Pavetta, Psychotria, and possibly other genera of the Rubiaceæ contain colonies of a nonmotile, nitrogen-fixing bacterium which he names *Myco-bacterium rubiacearum*. The bacteria of this species almost invariably inhabit the micropyle of the young seed and, when the seed germinates, grow through certain stomata of the very young leaves and into the intracellular spaces formed in the leaf tissues around these stomata. Cavities are formed through the growth of the epidermal cells, which later close entirely and make bacterial nodules which are deeply embedded in the leaf tissues. A single leaf may have several dozen of these symbiotic bacterial nodules. Faber was able, by treating the seeds with hot water and a sublimate solution, to kill the inhabiting myco-bacteria and, later, to infect part of the seedlings grown from these seeds with pure cultures of the bacterium. The artificially infected seedlings grown in soil free from combined nitrogen grew well and remained healthy for four months, whereas those not so infected turned yellowish white and died in three or four weeks. The plants from unsterilized seeds produced leaves bearing many more bacterial nodules than did those from sterilized seeds which were later artificially inoculated. In view of the facts that these rubiaceous plants with

45554 to 45557—Continued.

bacterial nodule-bearing leaves occur in many parts of the Tropics and that in India, at least, the value of their leaves for manure has long been recognized, and considering the value of nitrogen-fixing legumes as fertilizers, the suggestion of Faber that we may have in these tropical trees and shrubs plants of positive agricultural value for the tropical planter is well worthy of consideration. The value of the mulch formed by the leaves of leguminous and other plants is keenly appreciated by the best cultivators, and it may be possible to find suitable small shrubs of Pavetta or other rubiaceous plants which will be worth while growing for their nitrogen-fixing leaf bacteria in the orchards of our semi-tropics or wherever else the climate will permit of their cultivation." (*Fairchild.*)

45555. MACROZANONIA MACROCARPA (Blume) Cogn. Cucurbitaceæ.
(*Zanonia macrocarpa* Blume.)

"This is one of the most remarkable climbing vines or lianas of Java; remarkable because of the size of the fruits, which are as large as medium-sized pumpkins and are borne high in the tops of the forest trees. As the fruits ripen they open at the bottom, and through the triangular opening the great winged seeds fall out and, like flocks of aeroplanes, sail away in a most spectacular manner. No seed that I know of illustrates more perfectly the principles of the aeroplane than the seeds of this plant; and if for no other purpose than that of instructing the youth in our schools with regard to the principles of seed dissemination, this interesting plant is worthy of cultivation in our own tropical regions. It should be experimented with in Porto Rico and Hawaii; and it might succeed in the hammocks of Florida." (*Fairchild.*)

45556. MANGIFERA ODORATA Griffith. Anacardiaceæ.

"A large tree from Malacca, Java, and probably other islands in that region, where it is known as *kuwini*. The leaves are about the size of those of the common mango; like the latter, the flower possesses but one or, at most, two fertile stamens. The fruit is described by Griffith as oblong, yellow-green with yellow spots, ill-smelling, and filled with sticky gum; flesh yellow, fibrous, sweet, not turpentine; stone compressed, fibrous. This species of *Mangifera* is little known in horticulture and seems nowhere to be held in great esteem as a fruit. It is of interest in connection with studies of the cultivated mangos." (*Wilson Popenoe.*)

45557. CEIBA PENTANDRA (L.) Gaertn. Bombacaceæ. **Kapok.**
(*Eriodendron anfractuosum* DC.)

A moderate-sized, quick-growing, upright thornless tree, indigenous to tropical Asia and Africa. A striking peculiarity is the manner in which the branches stretch out horizontally in whorls at right angles to the stem. Around the base of the tree are produced thin buttresses or flanges which sometimes extend for 30 feet or more from the base. The tree is deciduous in the dry season, January to April, the greenish white flowers being produced in clusters shortly after the leaves have dropped; the fruit pods which follow are ripe about three months later. The latter contain a quantity of silky cotton (kapok), and when ripe burst open and disperse their contents. The pods should therefore be collected before they are quite dry and then dried in the sun. **Kapok**

45554 to 45557—Continued.

is largely used for stuffing pillows and mattresses and for upholstering, etc., both in the countries where it is grown and in those to which it is exported. The largest supply comes from Java, where the trees are grown as a secondary product. The wood is used to some extent in interior construction, but it is soft, white, and brittle. The tree is readily propagated from seed or cuttings and thrives from sea level up to 2,000 feet. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 518, and *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 700.)

45558 and 45559.

From Berkeley, Calif. Seeds presented by Mr. E. B. Babcock, Division of Genetics, Department of Agriculture, University of California. Received November 30, 1917. Quoted notes by Mr. Babcock.

45558. AQUILEGIA TRACYI × CHRYSANTHA. Ranunculaceæ. Columbine.

"Unguarded seed from F₁ hybrids between *Aquilegia tracyi* ♀ and *A. chrysantha* ♂. Cross made in 1915. Parents and F₁ plants now in plant-breeding garden of the Division of Genetics, Department of Agriculture, University of California. This seed may produce extremely variable offspring, some of which may be of greater ornamental value than either of the parents."

45559. DELPHINIUM CARDINALE × (?). Ranunculaceæ. Larkspur.

"Unguarded seed from an F₁ hybrid between *Delphinium cardinale* [a red-flowered species from southern California] and a garden hybrid with deep-blue flowers. Cross made in 1915. F₁ plants now in plant-breeding garden of Division of Genetics, Department of Agriculture, University of California. This seed may produce extremely variable offspring, some of which may be of greater ornamental value than either of the parents."

45560 to 45564. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 24 to December 19, 1917. Quoted notes by Mr. Popenoe.

45560. "(No. 212. Avocado No. 26. City of Guatemala. November 13, 1917.) *Manik*. Bud wood of a productive and rather early variety of excellent quality. It is a medium-sized fruit of pleasing form and clear yellow flesh of unusually rich flavor.

"The parent tree is growing in the finca La Polvora, in Antigua. The altitude is about 5,100 feet. While it is growing among coffee bushes and grevilleas, the tree is not crowded and has developed to a large size. It stands about 50 feet high, with a rather slender trunk and a dense crown, the trunk being 2 feet thick at the base and branching about 8 feet from the ground. The age of the tree is probably 30 years or more. It is badly attacked by leaf-gall, but in general has the appearance of a strong, vigorous variety, the branchlets being well formed, long, round, and stout. The bud wood is good, having strongly developed eyes well placed for cutting.

"Antigua does not experience severe frosts; hence, it is impossible to determine in advance of a trial in the United States whether or not the variety is any hardier than the average of the Guatemalan race.

45560 to 45564—Continued.

"The flowering season is February and March.. The tree blooms profusely and in some years sets enormous crops of fruit. In 1917 a very heavy crop was ripened. In general, the bearing habits of the tree give promise of being unusually good, there being a tendency for the fruits to develop in clusters. The season of ripening is properly from February to June, but fruits picked early in December develop fairly good flavor upon being ripened in the house. The season may be termed early to midseason.

"The fruit is more variable in form than that of most other varieties. The range is from oval to slender pyriform, nearly all the fruits being of the latter shape, without, however, a well-defined neck. The weight varies from 8 to 12 ounces. The surface is slightly rough and green in color. The skin is moderately thick, the flesh rich yellow, quite free from all fiber or discoloration, and of very rich and pleasant flavor. The seed is a trifle large in some specimens, small in others, being medium sized or rather small on the average. It is tight in the seed cavity.

"The variety may be formally described as follows:

"Form oval to elliptic-pyriform; size below medium to medium, weight $8\frac{1}{2}$ ounces to 12 ounces, length $3\frac{3}{4}$ to $4\frac{1}{4}$ inches, breadth $2\frac{1}{4}$ to $3\frac{1}{4}$ inches; base rounded to pointed, the stem inserted slightly to one side without depression; apex rounded to broadly pointed; surface sparsely pebbled, uniformly so, bright green in color, with comparatively few small yellowish dots; skin not very thick for this race, one-sixteenth of an inch near the stem and slightly more toward the apex of the fruit, hard and coarsely granular; flesh rich cream yellow in color, free from fiber and with no discoloration, firm and unusually dry, of rich and pleasant flavor; quality very good; seed ovoid-conical, medium sized, weighing 1 ounce more or less, tight in its cavity, with both seed coats adhering closely to the smooth cotyledons."

45561. "(No. 211. City of Guatemala. November 13, 1917.) *Kaguah*. Bud wood of avocado No. 33 from the finca La Polvora, in Antigua. A promising variety in appearance, but since ripe fruits were not tested it should be held for limited distribution in California and Florida.

"The parent tree is about 30 feet high, slender, the crown fairly dense but not broad. The trunk is 8 inches thick at the ground, branching at a height of about 15 feet. The crop this season is satisfactory, though not to be termed heavy. The growth seems to be vigorous and healthy, the branchlets being round and well formed, with the buds conveniently placed for cutting and of large size, indicating that the variety will probably be easy to propagate. The wood is not unusually brittle.

"The location of the tree is in the finca La Polvora, at Antigua, Guatemala. The altitude is about 5,100 feet. The tree stands among coffee bushes, but has room for good development.

"The fruit, judging from slightly immature specimens, will be about 24 ounces in weight, long and slender in form, with a thick neck. The surface is rough and is said to be deep green at maturity. The flesh shows no fiber nor discoloration, and its deep-yellow color indicates that it will be of good quality. The seed is medium sized and tight in the cavity. The season gives promise of being late."

45560 to 45564—Continued.

45562. "(No. 214. Avocado No. 34. November 20, 1917.) *Ishim*. Cuttings of a tree from the sitio of Ignacio Hernandez, at San Lorenzo del Cubo, near Antigua.

"While most avocados in the Antigua region do not ripen their fruits until February or March, this one matures its entire crop by the end of November. It can be considered, therefore, a very early variety, and as such is worthy of a trial in California, where early varieties of the Guatemalan race are needed. Its only visible defect is its somewhat large seed. The quality is good, and the fruit is attractive in appearance.

"The parent tree is growing in a small coffee plantation belonging to Ignacio Hernandez, situated on the hillside above San Lorenzo del Cubo, a village some 3 miles from Antigua. The altitude is about 5,500 feet. The tree is about 35 feet high, broad and spreading in habit, with a fairly dense crown 40 or 45 feet broad, slightly inclined to droop. The trunk is divided into two main branches, one about 1 foot thick at the base, the other 9 inches. The larger branch divides 8 feet from the ground into two main limbs. The growth seems to be reasonably vigorous and the branchlets are well formed and stout. The bud wood appears to be quite satisfactory.

"This location is not sufficiently high to experience cold weather, hence the variety must be assumed to be of average hardiness for the Guatemalan race until it can be given a trial in the United States.

"The productiveness of this variety is somewhat in doubt. The crop harvested in 1917 was not large. The tree bloomed heavily in December and was setting a good crop when last seen. The season of ripening extends from October to the first of December. Probably the fruits would remain on the tree later than December if given an opportunity to do so, but as avocados are very scarce at this season of the year they are picked as soon as mature.

"The form of the fruits, pear shaped to obovoid, is attractive, as is the deep maroon color which they assume upon ripening. They are of convenient size, about 12 ounces, and the flesh is yellow and of good quality. The seed is larger than in the best late varieties, but not unreasonably large. It is tight in the cavity.

"Following is a formal description of the fruit:

"Form most commonly pyriform, but sometimes obovate; size below medium to medium, weight 10 to 12½ ounces, length 4 to 5 inches, greatest breadth 2⅞ to 3⅛ inches; base narrow to rounded, the stem inserted obliquely almost without depression; apex rounded or obtusely pointed, somewhat flattened around the stigmatic point; surface almost smooth, sometimes pitted, deep dark maroon in color, with numerous small light-maroon dots; skin unusually thin for this race, slightly less than one-sixteenth of an inch, soft, tender, peeling fairly readily when the fruit is ripe, but leaving some purplish coloration on the flesh; flesh fine grained, buttery, cream yellow in color, with slight fiber discoloration in some specimens, but no actual fiber, the flavor moderately rich and nutty; quality good; seed large, broadly conical to nearly spherical in form, weighing 1½ to 2¼ ounces, tight in the seed cavity."

45563. "(No. 215. Avocado No. 35. November 20, 1917.) *Kanan*. From the sitio of Ignacio Gonzales, at San Lorenzo del Cubo, near Antigua.

45560 to 45564—Continued.

An early variety from the Antigua region, of rather large size, desirable form, and excellent quality. Although a round avocado, the seed is not large in proportion to the size of the fruit, but on the contrary is rather small. On the whole this seems a very promising variety.

"The parent tree is growing in a small coffee plantation belonging to Ignacio Gonzales, situated on the road to San Lorenzo del Cubo. The altitude is approximately 5,300 feet. The tree is about 35 feet high, with a trunk 30 inches thick at the base, dividing 2 feet above the ground to form two main limbs each 1 foot in diameter. These give off their first branches about 12 feet from the ground. The bud wood is excellent, the branchlets being stout and well formed, with vigorous buds conveniently placed.

"The tree did not produce a heavy crop from the 1916-17 blooms, but is said to have borne heavily in past seasons. It flowers in December and January and commences to mature its fruits the first of the following December. They are not at their best until January.

"The climate of this location is not sufficiently cold to test the hardiness of the variety; hence, it must be assumed, pending a trial in the United States, that it is of about average hardiness for the Guatemalan race.

"In form the fruit resembles the Trapp, of Florida, being round to oblate. It also resembles the Trapp in size and color, but the surface is somewhat rough and the skin thick and hard. The flesh is cream yellow, free from discoloration, and of a rich and pleasant flavor. The seed is small and tight in the cavity.

"The variety may be formally described as follows:

"Form nearly spherical, varying to slightly oblate and more rarely to broadly obovoid; size above medium to very large, weight 16 to 20 ounces, length $3\frac{1}{2}$ to $4\frac{1}{2}$ inches, greatest breadth $3\frac{1}{2}$ to 4 inches; base rounded, the stem inserted very slightly to one side and almost without depression; apex flattened; surface pebbled, bright green in color with a few large yellowish dots; skin moderately thick, nearly one-eighth of an inch, coarsely granular, woody, and brittle; flesh cream color, greenish close to the skin, free from fiber or discoloration, of rich and pleasant flavor; quality very good; seed rather small, weighing about 2 ounces, oblate in form, tight in the cavity, with both seed coats adhering closely to the smooth cotyledons."

45564. "(No. 223. Avocado No. 36. December 10, 1917.) *Chabil*. A small, early variety of attractive appearance, desirable form, and excellent quality. It is similar to No. 6 [S. P. I. No. 43560] and is from the same region.

"The parent tree is growing in a small coffee plantation belonging to Ignacio Hernandez, situated on the hillside above San Lorenzo del Cubo, about 3 miles from Antigua. The altitude is approximately 5,500 feet. The tree is 45 feet high, the crown round, of good form, 45 feet broad, formed high above the ground. The trunk is 2 feet thick at the base, and the branches are 15 feet above the ground. The age of the tree is not known.

"The altitude of this location is not sufficient to show whether the variety is unusually hardy or not. It may be assumed to be of average hardiness for the Guatemalan race until it has been tested in the United States.

45560 to 45564—Continued.

"The crop ripened at the end of 1917 was a very large one, indicating that the productiveness of the variety is likely to prove satisfactory. The flowering season appears to be December and January, the fruiting season November to March.

"The fruit is round, weighs about 9 ounces, and is deep purple when fully ripe. The skin is thick and woody. The flesh is yellow. The seed is rather small for a round fruit, and is tight in the cavity.

"Following is a formal description of the variety:

"Form spherical or nearly so, usually slightly oblique; size below medium, weight averaging 9 ounces, length $3\frac{1}{2}$ inches, greatest breadth $3\frac{3}{8}$ inches; base slightly flattened, the stem inserted somewhat obliquely without depression; apex obliquely flattened, but not prominently so; surface practically smooth, deep dull purple in color when fully ripe, with scattering large yellowish dots; skin thick, sometimes more than one-eighth of an inch, very coarsely granular, hard and woody, rather unusually so; flesh rich cream yellow in color, with a few fine and almost unobjectionable fibers running through it, flavor rich and nutty; quality good; seed medium sized, averaging about $1\frac{1}{2}$ ounces in weight, oblate in form, tight in the cavity, with both seed coats adhering closely to the smooth cotyledons."

45565 to 45567.

From Paris, France. Presented by Vilmorin-Andrieux & Co. Received November 30, 1917.

45565. AVENA SATIVA L. Poaceæ.

Oats.

"*Hybride noir très hâtive* [very early black hybrid]. This variety was obtained about 10 years ago at the experimental farm at Verrieres by crossing the *Australia* and *Joanctte* varieties. It has been carefully selected and has proved itself to be a well-fixed variety which is vigorous, tillers well, and attains a height of 4 to 5 feet, according to cultural conditions. The panicle is well filled and perfectly continuous, and the spikelets contain two and often three beautiful, black, full, faintly awned grains.

"In our comparative studies this variety has constantly ripened 8 or 10 days in advance of the earliest, established varieties, giving a greater yield. Sown the first of March it heads early in June, and ripens about the 20th of July. In brief, it is highly profitable, uniting the best qualities—extreme earliness, abundant production, and resistance to rust and to shattering." (*Vilmorin-Andrieux & Co.*)

45566 and 45567. TRITICUM AESTIVUM L. Poaceæ.
(*T. vulgare* Vill.)

Wheat.

45566. "Aurore. The earliest and most productive of spring wheats. May be sown up to the 15th or 25th of March. The spike is pale reddish, and the grain is large and reddish." (*Vilmorin-Andrieux & Co.*)

45567. "Hybride des Allies." This is a variety of wheat which was being planted in France to help relieve the food situation during the war. The following is an extract from a letter sent to the United States Department of Agriculture by M. Louis de Vilmorin: "We have been trying to help the farmers on this side with our new wheat '*Blé des Allies*,' which is on its way to prove itself a

45565 to 45567—Continued.

very valuable asset as a spring as well as a fall wheat. It can be sown under our climate until the end of March, and its earliness and heavy yield recommend it for war-time cultivation."

45568. ALBIZZIA WELWITSCHII Oliver. Mimosaceæ.

From Loanda, Angola, Africa. Seeds presented by Mr. John Gossweiler, Servicos de Agricultura. Received December 3, 1917.

Tree of 40 to 50, occasionally 80, feet in height, with a spreading truncate crown. The flowers are yellowish green or from whitish to pale straw color, and the silky puberulous petals and sepals are almost entirely united. The tawny puberulous peduncles are 1 to 2 inches in length, and proceed from the upper axils, or form short leafless terminal corymbs, sometimes scarcely overtopped by the leaves. The wood is durable, very light, and rather smooth. Reported from Upper Guinea, Lower Guinea, and Nile Land. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 2, p. 362, and *Hicrn, Catalogue of Welwitsch's African Plants*, pt. 1, p. 317.)

45569 to 45571.

From Manila, Philippine Islands. Presented by Mr. Adn. Hernandez, Director of Agriculture. Received December 4, 1917.

45569 and 45570. LILIUM PHILIPPINENSE Baker. Liliaceæ.

Benguet lily.

"This new white trumpet lily seems destined to become of very great value to both private and commercial growers. The short time necessary to flower it after potting surprises all who are growing it for the first time. We found last year that it was all the introducers claimed for it, and from a batch of small bulbs potted September 8 we cut flowers December 3 this year. These bulbs were grown in a coldframe for nearly half that period, or they would have flowered earlier.

"The long, pure-white, sweet-scented flowers arrange beautifully in vases. The stems are sufficiently strong, without being too rigid, as is the case with other forcing *Liliums*, and the foliage is so much more graceful than that of other lilies that any flower lover would not hesitate a moment which variety to select when both were purchasable. For floral designs this lily is superior to any other white variety, and we fully expect it will in a few years be as much a market necessity as *Lilium harrisii* and *L. longiflorum* now are. Six or seven bulbs may be grown in a 6-inch pot or pan, and a dozen or more in an 8-inch pan for a good effect." (*Florist's Review*, December 13, 1917.)

45569. "Seeds."

45570. "Bulbs."

45571. ANNONA CHERIMOLA × SQUAMOSA. Annonaceæ.

Atemoya.

"Bud sticks of No. 12." This cross has produced a hybrid, the fruit of which is small and weighs on an average 175 grams, with a length of 65 millimeters and a transverse diameter of 60 millimeters. The shape of the fruit is cordiform, regular, and the carpels end in a more or less pointed protuberance. The surface is green with reddish dots on the sun-exposed side and covered by a white bloom. The skin is quite thick and tough. The pulp is white, juicy, sweet, faintly aromatic, and devoid of the cherimoya flavor, but it is of good quality. (Adapted from *Wester, Philippine Agricultural Review*, third quarter, 1915.)

45572. PENNISETUM PURPUREUM Schum. Poaceæ. Napier grass.

From Rhodesia. Seeds presented by Mr. J. Burt Davy, Johannesburg, Union of South Africa. Received December 5, 1917.

"The great value of prolific and drought-resistant fodder plants, which are generally very difficult to procure, is well known to stock owners, and this species, which is but little known as yet, can be most highly recommended for both of these qualities. During the last season, which was very dry and most disastrous for stock, this grass grew to a height of nearly 11 feet and produced a large quantity of succulent, nutritious, and fattening fodder. This is greatly relished by the stock and is, according to analysis, much richer than green maize. A reliable official says: 'There is a consensus of opinion that in this plant we have found a fodder of great value and one which remains green even during such long periods as from six to eight months when other herbage is parched up or destroyed.' It grows rapidly to the height of 12 feet or more in favorable weather, thrives well in various soils, and resists both frost and drought to a remarkable extent. At a height of 7 feet it has produced 12 tons of green fodder per acre, and a few months later 15 tons, making a total yield of 27 tons per acre. It is everlasting when once established, and the tufts or stools increase in size after each cutting or when grazed off. It should prove of untold value to farmers in South Africa, who suffer much loss through frequent and protracted droughts, and in the East Indies and other countries where light rainfall and semiarid conditions obtain. As a prolific and drought-resistant plant it promises to prove one of the very best brought into cultivation." (B. Harrison.)

See S. P. I. No. 43241 for previous introduction.

45573. ARALIA CHINENSIS MANDSHURICA (Rupr.) Rehder. Araliaceæ.

From Jamaica Plain, Mass. Plants presented by the Arnold Arboretum. Received December 5, 1917.

This is a small hardy tree from Japan, resembling *Aralia spinosa* (Hercules' club), but it is more treelike, has fewer spines, and does not sucker, which makes it a much more desirable lawn tree. It does not form many branches, but the large bipinnate leaves cast a good shade. The greenish white flowers are borne in large panicles. The berries are dark red when ripe, producing a very pleasing effect. Like all other aralias, *A. mandshurica* grows freely from pieces of root. (Adapted from *The Florists' Exchange*, November 6, 1915.)

45574. MEDICAGO SATIVA L. Fabaceæ. Alfalfa.

From Novelda, Alicante, Spain. Seeds presented by Mr. Elias Rizo. Received December 11, 1917.

45575 to 45578.

From the city of Guatemala, Guatemala. Seeds collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received December 15, 1917. Quoted notes by Mr. Popenoe.

45575. CRATAEGUS STIPULOSA (H. B. K.) Steud. Malaceæ. Manzanilla.

"(No. 216a. November 20, 1917.) A native species of *Crataegus*, well known in the Guatemalan highlands where it occurs both wild and cultivated. Seed previously sent in under No. 32a (S. P. I. No. 43430).

"The manzanilla is a large shrub or small, erect, slender tree about 20 feet tall, sometimes having a thick trunk a foot or more in diameter at

45575 to 45578—Continued.

the base, but never developing to a great height. In spring it produces white flowers resembling apple blossoms. In early fall, commencing about October, the fruits ripen, and from this month are abundant in all the markets until after Christmas. They are much used for decorative purposes, after being strung on long threads. They are eaten in several ways, principally stewed and in the form of jelly. For stewing they are first boiled with wood ashes, after which the skin is easily removed; they are then placed in hot sirup and boiled for a short time. Their flavor somewhat suggests that of the apple and is very pleasant.

"The fruits look like small apples, being nearly spherical, yellow with russet dots and a blushed cheek, and having a slender stem. The largest ones are $1\frac{1}{2}$ inches in diameter. The ordinary size is about 1 inch. The thin skin surrounds a rather dry, yellowish, mealy pulp and three large seeds. The plant is easily grown and should succeed in California and Florida."

45576. *ANNONA CHERIMOLA* Mill. Annonaceæ.

Cherimoya.

"(No. 217a. November 22, 1917.) Seeds from exceptionally fine cherimoyas, the largest ones weighing more than 4 pounds. These were purchased at the market in the city of Guatemala. It seems worth while to grow these seeds and bring the trees into fruit, in the hope that choice varieties may be obtained. They should be tested in southern California."

45577. *BURSERA* sp. Balsameaceæ.

Copal.

"(No. 218a. November 22, 1917.) One of several species which furnish the copal gum so extensively used in Guatemala as incense. The burning of this incense in religious ceremonies is a custom which has come down from the earliest times and is still practiced, mainly by the Indians. The gum is obtained by making incisions in the bark of the tree, which is rather small in size and is common in the highlands, both wild and cultivated."

45578. *DAHLIA POPENOVII* Safford. Asteraceæ.

Dahlia.

"(219a. November 22, 1917.) Collected near Santa Maria de Jesus, Department of Sacatepequez, at an altitude of about 6,800 feet.

"This species is common in the region around the city of Guatemala and as far north as the Chuacus Mountains. It has been seen as high as 7,000 feet and as low as 5,000, but is most common between 6,000 and 6,500, frequently in open places along the roadsides and ravines. The plant grows about 4 feet high. It flowers abundantly during September and October, the flowers being 2 to 3 inches broad, with 8-ray florets. The latter are all infertile, long and slender in form, and orange-brown to crimson in color. This species is of interest to those engaged in breeding or studying the cultivated dahlias. Mr. W. E. Safford considers it the probable ancestor of the cultivated cactus dahlias."

45579. *PSIDIUM FRIEDRICHSTHALIANUM* (Berg) Niedenzu. Myrtaceæ. **Costa Rican guava.**

From Matania el Saff, Egypt. Seeds presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received December 18, 1917.

"This is a very sour but very aromatic guava which might be used in addition to other fruits. It is medium sized, yellow, with yellow flesh. The glossy

red-stalked leaves are in two rows on the pendulous twigs. This tree is a shy bearer in Egypt, probably on account of the heat and the dry air." (*Bircher.*)

45580. PERSEA AMERICANA Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

From the city of Guatemala, Guatemala. Seeds collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received December 19, 1917.

Avocado seeds introduced for stock purposes.

45581. IRIS ORIENTALIS Mill. Iridaceæ.

Iris.

(*I. ochroleuca* L.)

From Bellingham, Wash. Bulbs presented by Mr. C. T. Canfield. Received December 20, 1917.

"A species from high table-lands of Turkestan. I admire it more for foliage effect. It delights in stiff clay loam." (*Canfield.*)

One of the largest of the irises. The plants grow in strong clumps; the leaves are 2 to 3 feet long, 1 inch or more broad, and slightly glaucous. The stem is 3 feet tall, stout, terete, about as long as the leaves, with two to three spicate clusters of flowers, the outer segments of which are obovate, 1 inch broad, as long as the claw, yellow, paler or white toward the margin, and the inner segments oblong, 1 inch broad, lemon yellow to whitish. It grows in almost any situation. Native to Asia Minor and Syria. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 3, p. 1678.)

Received as *Iris gigantea*.

45582 and 45583.

From Madrid, Spain. Seeds presented by the director of the Botanic Garden. Received December 11, 1917.

45582. CONVULVULUS SCAMMONIA L. Convolvulaceæ.

Scammony.

The plant has a large, tapering, fleshy root, 3 to 4 feet long, 9 to 12 inches in circumference, and abounding in a milky juice. It is this juice, in a concentrated form, which constitutes the drug called scammony. In its medicinal action scammony is a violent purgative and is therefore seldom used except along with other cathartics, by which its action is mitigated and theirs promoted. Native to Syria and the Levant. (Adapted from *Hogg, Vegetable Kingdom*, p. 536.)

45583. PARIETARIA OFFICINALIS L. Urticaceæ.

A bushy plant from 12 to 18 inches high, with reddish brittle stems, oblong-ovate dull-green leaves, and tufts of small greenish flowers in the axils of the upper leaves. It is sometimes used as a potherb. While the ashes of the plant are said to contain a quantity of niter, its medicinal properties are almost negligible. The proportion of potassium nitrate which it contains is really too inconsiderable to enter seriously into account; nevertheless, it passes for an emollient and diuretic and as such has sometimes been prescribed in diseases in which inflammation is to be reduced. (Adapted from *Lindley, Treasury of Botany*, p. 846; *National Standard Dispensatory*, p. 1613; and *Heraud, Dictionnaire des Plantes Medicinales*, p. 458.)

45584. LILIUM sp. Liliaceæ.**Lily.**

From Soochow, China. Seeds presented by Prof. N. Gist Gee, Soochow University. Received December 12, 1917.

Introduced for bulb-culture experiments by Department of Agriculture officials.

45585. VITIS VINIFERA L. Vitaceæ.**Grape.**

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received December 18, 1917.

A hybrid between the *Cabernet* and *Cot* varieties of the common European grape, produced at the Botanical Station at Algiers.

45586 and 45587.

From Kingmen, Hupeh Province, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received November 16, 1917. Quoted notes by Mr. Meyer.

45586. PYRUS CALLERYANA Decaisne. Malaceæ.**Pear.**

"(No. 2446a. September 1 to 8, 1917.) About 20 pounds of seeds of a cultivated variety of Chinese pear, called *Chia t'ang li* (domestic crab-apple pear). This variety exists in several forms, ranging in size from that of a cherry to a small-sized hen's egg; in shape from flattened globular to pyriform; in color from greenish yellow to russet brown; in taste from somewhat astringent sour to mealy sweet, while some have a decided *Sorbus* afterflavor. They are all covered with a multitude of small specks and have a deciduous calyx. The trees are very productive, some branches breaking under the load of small fruits which occur singly, in pairs, and in bunches of three to six.

"They are almost all perpetuated by grafting upon the wild *Calleryana* pear which occurs along edges of rice fields. It is said that seedlings from this domestic *Calleryana* pear are not as vigorous and not as well suited for stock purposes as the real wild type. This, however, will have to be confirmed by actual experiment, as will its resistance to blight.

"Some groves of these pears should be planted for seed-bearing purposes in localities where no late spring frosts occur. All seedlings raised should be inoculated, to weed out possible nonimmune types."

45587. PTEROCARYA STENOPTERA DC. Juglandaceæ.

"(No. 2447a. September 5, 1917.) An ornamental tree, belonging to the walnut family, growing to a large size. The foliage is pinnate and of fresh green color. In early spring, before the leaves are out, the trees are loaded with long greenish brown, staminate catkins which give them a festive appearance; these are followed by racemes of small winged fruits which persist on the trees until September. The young foliage is covered with small yellow-brown glands and when rubbed smells like sour apples.

"The trees love moist situations, especially near running water and in porous soil; however, they also thrive on dry fields, but do not grow so fast nor so large as when near water. It is one of the best flowering trees in the foreign concessions at Hankow and Shanghai, and is called by foreigners the Chinese ash on account of its resemblance to a *Frax-*

45586 and 45587—Continued.

inus. Chinese name *Ma liu shu* (fiber willow tree), often abbreviated to *liu shu*.

"This is a very promising shade tree for streets, parks, and gardens in those sections of the United States where the summers are moist and warm and the winters but moderately cold. It does well where rice and cotton mature fully and where the large-leaved privet (*Ligustrum lucidum*) and the tea olive (*Osmanthus fragrans*) remain out of doors the year round."

45588. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.

From Kuling, Kiangsi, China. Seeds presented by Rev. John Berkin. Received December 13, 1917.

The *yang-tao*, as this deciduous climber is known in Szechwan Province where it is native, has attracted considerable attention from travelers and missionaries in China, because of the high quality of its fruits and the ornamental value of the plant. Single plants often grow 30 feet in length, so that the vine will cover large areas of trellis. The leaves have a plushlike texture and an unusual dark-green color. The young shoots are bright pink and villous pubescent. The size and regular spacing of the leaves make this climber valuable where large areas of foliage are desired. The flowers are buff yellow to white, fragrant, and of large size, being from 1 to 1½ inches in diameter. The abundance of these flowers adds greatly to the beauty of this plant and enhances its value as an ornamental.

Fruits abundantly produced, ovoid to globose, 1 to 2½ inches long, 1 to 1¼ inches across; epicarp membranous, russet brown, more or less clothed with villous hairs. Flesh green, of most excellent flavor, to my palate akin to that of the gooseberry, but tempered with a flavor peculiarly its own.

The fruit is excellent when fresh and also makes very fine jam and sauce. Full information is lacking in regard to the fruit grown outside of China; some fruits received from California, however, bear out the high praise given the fruit by travelers. While this plant is not hardy in regions of severe winters, the rapid growth in the spring will make it a valuable ornamental, even in those regions where it is killed to the ground each winter. (Adapted from *Fairchild, Some Asiatic Actinidias, Bureau of Plant Industry Circular No. 110, Miscellaneous Papers.*)

45589 to 45591. LIVISTONA spp. Phœnicaceæ. Palm.

From Buitenzorg, Java. Seeds presented by the director of the Botanic Garden. Received November 30, 1917.

45589. LIVISTONA SUBGLOBOSA (Hassk.) Mart.

This palm differs from *Livistona olivaeformis* in its longer, more graceful rachis and less deeply cut lacinations of the leaves. The fruits are solitary or in twos or threes, subglobose, blackish violet. (Adapted from *Hasskarl, Tijdschrift voor Natuurlijke Geschiedenis en Physiologie, vol. 9, p. 177.*)

45590. LIVISTONA ALTISSIMA Zoll.

A palm with graceful trunk two-thirds of a foot in diameter and 80 feet or more tall, with globose fruits about the size of small cherries. The natives value the exceedingly hard wood very highly and use it especially for rafters, which last for three generations. (Adapted from *Zollinger, Natuurkundig Tijdschrift voor Nederlandsch Indië, vol. 14, p. 150.*)

45589 to 45591—Continued.

"An East Indian palm 20 to 30 feet in height, with a thick, round crown, commonly met with throughout Assam, but most plentiful in the Nowgong District. The leaves are in universal use throughout Assam for covering the tops of doolees (palanquins) and the roofs of boats, also for making the peculiar umbrella hats (jhapees) of the Assamese. For all these purposes the leaves are admirably adapted by their lightness, toughness, and durability. The leaves are similarly employed by the Lepchas for thatching and umbrellas." (*Watt, Dictionary of the Economic Products of India*, p. 86.)

45592 and 45593.

From Kingmen, Hupeh Province, China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received December 19, 1917. Quoted notes by Mr. Meyer.

45592. *PYRUS CALLERYANA* Decaisne. Malaceæ.

Pear.

"(No. 2453a. October, 1917.) Over 100 pounds of seed of a small-fruited wild pear which has proved to be highly resistant but not totally immune to fire-blight in the inoculation experiments of Prof. F. C. Reimer, at Talent, Oreg. This pear grows in a variety of habitats, as at edges of ponds, in dense thickets, on rocky mountain slopes, in crevices, etc. It is used by the Chinese as a stock for improved pears and seems to make a good union. When left alone it grows into a large tree, reaching an old age. Where this pear occurs around Kingmen, *Pyrus betulæfolia* also is found, and since the latter resembles *P. calleryana* to a striking degree, it is impossible when collecting a large number of fruits to keep out the first entirely. A certain percentage of seed of this pear therefore is mixed with the true *P. calleryana* pear.

"As *P. betulæfolia* is highly susceptible to blight, roguing in the seed beds or nursery plantings should be carefully done.

"To insure pure seeds for future stock purposes, groves should be set out here and there away from other species and varieties of pears, so as to minimize hybridization, and in localities where spring frosts are of rare occurrence.

"Where *Pyrus calleryana* occurs wild, one finds it associated with *Ligustrum lucidum*, *L. quihoui*, *Pistacia chinensis*, *Xylosma racemosum*, *Celtis sinensis*, *Ulmus parvifolia*, *Ziziphus jujuba*, *Pinus massoniana*, *Vitex negundo*, *Cudrania tricuspidata*, *Phyllostachys* sp., *Poncirus trifoliata*, *Zanthoxylum alatum*, etc. In gardens with it one finds cultivated *Citrus ichangensis*, *C. grandis*, *C. nobilis*, *Osmanthus fragrans*, *Meratia praecox*, *Prunus pseudo-cerasus*, *Hovenia dulcis*, *Eriobotrya japonica*, *Paulownia tomentosa*, and others.

"The fruits of *Pyrus calleryana* when ripe become soft and assume a brown color, while those of *P. betulæfolia* also become soft but turn quite black. When not soft, however, the fruits of the two species can not be separated when once mixed unless there are leaves attached to them. Chinese name *Yeh T'ang li* (wild crab-apple pear)."

45593. *PISTACIA CHINENSIS* Bunge. Anacardiaceæ. Chinese pistache.

"(No. 2454a. October, 1917.) Over 200 pounds of seeds of the Chinese pistache, a very promising shade tree for those sections of the

45592 and 45593—Continued.

United States where the summers are warm and the winters but moderately cold. The young leaves are carmine red and the fall foliage gorgeously scarlet and yellow. The wood, which is very heavy and not often attacked by insects, is employed in the manufacture of furniture. From the seeds an oil is obtained which is used for illuminating purposes. The young expanded foliage buds are sparingly eaten boiled, like spinach. The staminate trees invariably grow larger and more symmetrical than the ones that bear the pistillate flowers. Chinese name *Huang lien shu*."

45594 and 45595.

From Chi Kung Shan, Honan Province, China. Seeds collected by Mr. G. D. Schlosser and sent by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received December 19, 1917.

45594. *PYRUS CALLERYANA* Decaisne. Malaceæ.

Pear.

For description, see S. P. I. No. 45592.

45595. *AMYGDALUS PERSICA* L. Amygdalaceæ.

Peach.

(*Prunus persica* Stokes.)

Seed of wild Chinese peaches introduced for experimental purposes.

45596 and 45597. LITCHI CHINENSIS Sonner. Sapindaceæ.

(*Nephelium litchi* Cambess.)

Lychee.

From Canton, China. Purchased from Mr. C. O. Levine, Agricultural Department, Canton Christian College. Received December 19, 1917.

45596. Variety *Hak ip* (black leaf).

45597. Variety *Kwai mi*.

45598 to 45604.

From the British West Indies. Seeds presented by Dr. O. L. Fassig, Weather Bureau, United States Department of Agriculture. Received October 15, 1917.

45598. *ORYZA SATIVA* L. Poaceæ.

Rice.

From St. Lucia.

45599. *CARICA PAPAYA* L. Papayaceæ.

Papaya.

From St. Lucia.

45600 and 45601. *GOSSYPIUM BARBADENSE* L. Malvaceæ.

Cotton.

45600. Sea Island cotton from the experimental station at King's Mount, St. Croix, developed by Dr. Longfield Smith, director, who presented this seed to Dr. Fassig.

45601. *Anna's Hope No. 1.* Variety of Sea Island cotton developed at the experimental station at King's Mount, St. Croix, by Dr. Smith, who presented this seed to Dr. Fassig.

45602. *PHASEOLUS VULGARIS* L. Fabaceæ.

Common bean.

(Trinidad, British West Indies, July 31, 1917.) Seeds presented to Dr. Fassig by Mr. J. B. Rorer.

"A very nice salad bean which is commonly grown here and known as the 'Seheult' bean. It is a climber and is very prolific." (Rorer.)

45598 to 45604—Continued.**45603 and 45604. RHEEDIA LATERIFLORA L. Clusiaceæ.**

(Trinidad, British West Indies, July 31, 1917. Seed presented to Dr. Fassig by Mr. J. B. Rorer.)

"The hatstand tree is a name which is said to be given to *Rheedia lateriflora*. It is common in the woods of Trinidad and is noted for its regular branching character when young. A small tree of 8 or 10 feet will often have as many as 20 or more branches of even size thrown out at regular and close intervals, at an angle of 45 degrees from the main stem. It is frequently cut, placed in a heavy base, and used as a hatstand; and when shortened into a pyramidal form and nicely trimmed and polished, it serves exceedingly well for the purpose." (*J. R. Jackson, The Garden, July 25, 1903.*)

45605. POLYGONUM TINCTORIUM Lour. Polygonaceæ.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received October 6, 1917.

"(No. 2443a. Hankow, China. June 14, 1917.) An annual herb, much cultivated throughout northern and central China for the blue dye it produces, which, however, fades easily. It is sown on rich lands toward the end of February, and the first cutting is made during June, and a much smaller one during August. Farther north the sowing takes place later and but one cutting can be obtained. To procure the dye material the plants are deposited in plastered pits, water is poured over them, and they are allowed to decay for several weeks; then the stems are taken out and the water is allowed to evaporate. When at last the slimy mass in the pit has become sufficiently dry, quicklime is added and thoroughly mixed, and the material is allowed to dry out until it can be well worked. It is then taken out and kept in tubs, barrels, and other vessels until needed for dyeing. The freshly dyed cloth possesses a most unpleasant odor which can often be detected for a considerable distance. Gradually, however, the wind takes away the odor and the cloth can then be made into garments. The dye seems to be used almost exclusively for the dyeing of coarse cotton cloth. Chinese name of the plant *Liao lan*." (*Meyer.*)

45606. PYRUS BETULAEFOLIA Bunge. Malaceæ. Pear.

From Jamaica Plain, Mass. Seeds presented by the Arnold Arboretum. Received November 28, 1917.

A slender, quick-growing, graceful tree, 20 to 30 feet high, with gray-felted young branches and round-ovate, long-pointed, coarsely toothed, lustrous leaves. The white flowers, three-fourths of an inch across, are borne in clusters of 8 to 10 and are followed by grayish brown, white-dotted fruits the size of peas. The Chinese use this species as a stock for the larger fruited pears. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 279.*)

45607. SMILAX sp. Smilacaceæ. Sarsaparilla.

From Kingston, Jamaica. Roots presented by Mr. W. Harris, Hope Gardens, Department of Agriculture. Received December 20, 1917.

This plant is used in Jamaica as a source of the sarsaparilla of commerce.

45608 and 45609.

From Cienfuegos, Cuba. Seeds presented by Mr. R. M. Gray, Harvard Experiment Station. Received December 18, 1917.

45608. CAMOENSIA MAXIMA Welw. Fabaceæ.

This vine, which adorns the tops of lofty trees in tropical Africa, bears probably the largest and most beautiful flowers of any plant in the world. These deliciously fragrant flowers, sometimes 8 inches in length, have petals of pure white margined with gold which becomes darker with age; they are borne in pendulous clusters of nearly a dozen individuals. The 3 to 4 seeded pod is 6 to 8 inches long, nearly straight, and clothed with ferruginous woolly tomentum. The leaves are digitately trifoliolate, the leaflets obovate-oblong, 5 to 6 inches long. One drawback to the cultivation of this plant is that it has been so extremely slow in coming into bloom, blooming only in hothouses of considerable size. Regarding the possibilities of this plant in the United States, Mr. George W. Oliver states: "Very likely this plant will flower oftener and more profusely in this country than in Europe, particularly England, because of our higher summer temperature, which enables the plant to grow rapidly and ripen its wood." (Adapted from *The Garden Magazine*, vol. 7, p. 229, and Oliver, *Flora of Tropical Africa*, vol. 2, p. 252.)

45609. GOSSYPIMUM BARBADENSE L. Malvaceæ.**Cotton.**

"Native tree cotton, called purple cotton by the natives." (Gray.)

45610. CHENOPodium AMBROSIoidES L. Chenopodiaceæ.

From Bahia, Brazil. Seeds procured by Mr. Edward Higgins, American consul at Bahia. Received December 20, 1917.

Known in Brazil as *herva de Santa Maria* or *Mastruz*. A viscid glandular, rankly smelling perennial herb, native to tropical America, but widely naturalized and growing abundantly in North America, especially in the eastern United States, as a coarse weed of the roadside and waste places. Its medicinal importance is due to the volatile oil which it contains. A very active anthelmintic is obtained when the bruised fruit or the expressed juice of the plant is used. It is frequently employed for the expulsion of lumbricoid worms, especially in children. (Adapted from *The National Standard Dispensatory*, p. 402.)

45611. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Trinidad, British West Indies. Seeds presented by the St. Clair Experiment Station, Department of Agriculture. Received December 21, 1917.

"*Louisiana 511*. One of the sugar-cane seedlings tested in 1908 at the Louisiana Sugar Experiment Station at Audubon Park, New Orleans; it is particularly noteworthy because of the unusually high sucrose content (16.3 per cent) for Louisiana conditions. The parent cane was *Trinidad 189*." (H. P. Agee, *Louisiana Bulletin No. 127*, May, 1911.)

45612. PYRUS MAMORENSIS Trabut. Malaceæ.**Pear.**

From Rabat, Morocco. Seeds presented by Commandant de Beaucoudrey, Inspector of Forests, at the request of Dr. L. Trabut, Algiers, Algeria. Received December 22, 1917.

"Seeds of a Moroccan pear which occurs with the cork oak in the forest of Moroccan Mamora. It is very resistant to dryness in the sandy noncalcareous soils. The vigorous tree will probably form a good stock. The fruit is rather large, and the seeds are very large." (*Trabut.*)

45613 and 45614. PASSIFLORA spp. Passifloraceæ. Granadilla.

From Caracas, Venezuela. Seeds presented by Mr. H. Pittier. Received December 26, 1917.

45613. PASSIFLORA sp.

Possibly a hybrid between *Passiflora edulis* and *P. maliformis*, as the seeds do not agree with either, although somewhat resembling each.

45614. PASSIFLORA LIGULARIS JUSS.**Sweet granadilla.**

"Unquestionably one of the best of the granadillas. In Guatemala it is common at altitudes of 4,000 to 7,000 feet, but I have never seen it in the lowlands; it appears, therefore, that it is adapted to subtropical climates and, judging from its presence in portions of Guatemala almost too cold for the avocado, I feel that it ought to succeed in California. The behavior of other species, such as *Passiflora edulis*, in that State indicates that conditions in general are favorable to the passifloras, and the question has generally been one of hardiness. Many species tested in California have proved to be too tender. *P. ligularis*, with slight protection during the first winter or two, certainly ought to thrive in the southern half of the State.

"In Guatemala it is a rampant climber, scrambling over trees and buildings and covering them with a canopy of green. It goes to the tops of trees 35 or 40 feet in height. Its foliage is bold, the large cordate leaves being as much as 6 or 8 inches in length.

"The ripening season commences in early fall and extends through the winter. Large plants bear abundantly, yet I have never seen a vine so laden with fruits as some of the plants of *Passiflora edulis* which grow in California gardens. The fruits are commonly 2½ inches in length and deep orange-yellow in color. Sometimes a purple-fruited variety is seen. The brittle outer shell or pericarp, when broken away at one end, exposes the small elliptic seeds individually inclosed in a juicy, white aril. The aroma of the fruit is delightful; it may properly be termed perfumed. The flavor is equally pleasant and, unlike many other passifloras, is not unduly acid. The fruit is commonly eaten out of hand, for which mode of use it seems best adapted. One can consume a large number of them without any ill effects.

"The fruits are often brought into the markets of Guatemala upon the backs of Indians from distances of a hundred miles. The pericarp is so tough that it is not easily bruised, hence the fruit can be transported without difficulty. It is attractive in appearance and so popular in Guatemala that it realizes higher prices in the markets than most other fruits which compete with it.

"The term granadilla (diminutive of granada, Spanish for pomegranate) is applied in tropical America to the fruits of various passi-

45613 and 45614—Continued.

floras. It is an attractive name, and it seems desirable to retain it; but an additional word is necessary to distinguish between the various species. The one under consideration might well be called the sweet granadilla." (*Wilson Popenoe*.)

For an illustration of a granadilla fruit, see Plate IV.

45615 and 45616.

From Manila, Philippine Islands. Seeds presented by Mr. Adn. Hernandez, Director of Agriculture. Received December 26, 1917.

45615. PHASEOLUS LUNATUS L. Fabaceæ.

Lima bean.

Patani. "A perennial twining vine of vigorous growth, commonly cultivated as an annual, of wide distribution, and in general cultivation; grown on a trellis, arbor, or bamboo poles for support. Indigenous to tropical America. There are at least seven distinct 'native' forms, of which the white-seeded varieties are the best for culinary uses; the colored or variegated beans should be boiled and the water changed two or three times to render them wholesome." (*Wester, Food Plants of the Philippines, p. 176.*)

45616. LANSIUM DOMESTICUM Jack. Meliaceæ.

Langsat.

"This, like the mangosteen, is a delicious oriental fruit not yet well established in America. While it is not so famous as the mangosteen, it is highly esteemed throughout the Malayan region and is praised by many travelers. To judge from our limited experience with it, the langsat is slightly hardier than the mangosteen, and there seems to be no reason why it should not succeed with us. A few plants have been grown in the West Indies and other parts of the American Tropics, but I have yet to hear of its fruiting outside the Orient. The langsat has two allies in America: One, the well-known umbrella tree (*Melia azedarach*) of the United States; the other, the tropical mahogany (*Swietenia mahagoni*). The genus *Lansium*, to which the langsat belongs, is a small one; and this species is the only one cultivated for its fruit. The duku, a fruit closely resembling the langsat, is commonly considered a botanical variety of *Lansium domesticum*.

"The tree is rather slender in habit, with a straight trunk and compound leaves composed of three or more pairs of elliptic to obovate leaflets three or four inches in length. The fruits, which ripen in the Straits Settlements from July to September, are produced in small clusters; in general appearance they suggest large loquats, the surface being straw colored and slightly downy. The skin is thick and leathery and does not adhere to the white, translucent flesh which separates into five segments. The flavor is highly aromatic, at times slightly pungent; each segment of the flesh normally contains an oval seed, but some of the segments in each fruit are usually seedless. The fruit is commonly eaten while fresh, but it is said also to be utilized in various other ways.

"The name lanzon is applied to this fruit in the Philippine Islands, langsat or lanseh being the form used in the Malay Peninsula." (*Wilson Popenoe*.)

45617 and 45618.

From Buitenzorg, Java. Seeds presented by Mr. P. J. S. Cramer, chief, Plant-Breeding Station. Received December 26, 1917.

45617. CROTALARIA USARAMOENSIS Baker f. Fabaceæ.

An herbaceous plant used in Java for green manuring. Leaves compound, remote; leaflets narrow elliptical, apex subacuminate, base cuneate, 4 to 6 centimeters long, 10 to 16 millimeters wide; stipules none. Flowers pedicillate, numerous, in elongate terminal racemes. (Adapted from Baker, *Journal of the Linnean Society*, p. 346.)

45618. MIMOSA INVISA Mart. Mimosaceæ.

A plant which is used in Java for green manuring. The stems are prostrate or ascending, the foliage sensitive to the touch. The flowers are described as rose colored. The species is distributed from Mexico to central Brazil. (Adapted from Micheli, *Flore du Paraguay*, p. 59.)

45619 to 45622.

From Concepcion, Paraguay. Seeds presented by Mr. Thomas R. Gwynn. Received December 27, 1917.

45619. DIOCLEA REFLEXA Hook. f. Fabaceæ.

Ornamental, woody, climbing plant, up to 20 feet in length, with compound leaves composed of three thickish leaflets and rather dense racemes (4 to 6 inches long) of red flowers. The broad-oblong leathery pod, 3 to 4 inches long, is densely covered with yellowish gray silky hairs. (Adapted from Oliver, *Flora of Tropical Africa*, vol. 2, p. 189.)

45620. HOVENIA DULCIS Thunb. Rhamnaceæ. Raisin tree.

An ornamental, deciduous Japanese tree with leaves often 4 to 5 inches long and white or greenish white flowers that make little display. After flowering, the peduncles thicken and become edible, being red, pulpy, and of sweetish taste. Strange as it may seem, the thickened reddish peduncles form the main attraction of the inflorescence. Successfully propagated by cuttings of soft wood under glass. (Adapted from *The Florist's Exchange*, January 22, 1916.)

**45621. SCHIZOLOBIUM PARAHYBUM (Vell.) Blake. Cæsalpiniaceæ.
(*S. excelsum* Vog.)**

A very large, quick-growing tree, up to 120 feet in height; native of Brazil. The fine leathery leaves are bipinnate. The bright-yellow flowers are borne in large erect racemes during February or March when the tree is quite bare of leaves. The flowers are at once followed by beautiful young foliage. It thrives up to 1,500 feet altitude in the moist region of Ceylon. (Adapted from Macmillan, *Handbook of Tropical Gardening and Planting*, 2d ed, p. 300.)

**45622. TIPUANA TIPU (Benth.) Lillo. Fabaceæ. Tipu.
(*T. speciosa* Benth.)**

Ornamental, unarmed tree for the extreme southern United States. Flowers yellow, showy, in loosely branched terminal panicles; standard broadly orbicular, wings very broadly half-ovate, much longer than the keel; leaves unevenly pinnately compound, leaflets 11 to 21, oblong, entire; pod stipitate, indehiscent, 1 to 3 seeded, samaralike. (Adapted from Bailey, *Standard Cyclopedia of Horticulture*, vol. 6, p. 3351.)

45623. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.

From Deming, N. Mex. Seeds presented by Miss Ruth I. Grover. Received December 27, 1917.

"These beans were found in an old Aztec Indian grave in old Mexico in 1916. They are of the bush variety and I believe very hardy if irrigated." (*Miss Grover.*)

A bean with a twining stem which, if supported, will rise to a height of 14 feet. The leaves are smaller than those of the common kidney bean, and the flowers, which are in long spikes and of a deep scarlet color, are larger. The pods are large and rough, and the seeds are purple marked with black, although sometimes pure white. This bean was formerly cultivated for its flowers only, and was first mentioned as being edible by the gardener, Philip Miller. (Adapted from *Miller, Gardeners' and Botanists' Dictionary, 9th ed.*)

This is a white-seeded form.

45624. LITCHI CHINENSIS Sonner. Sapindaceæ. Lychee.
(*Nephelium litchi* Cambess.)

From Canton, China. Purchased from Mr. C. O. Levine, Agricultural Department, Canton Christian College. Received December 11, 1917.

"Cuttings from trees of variety *Wai Chie* growing on the college campus." (*Levine.*)

45625 to 45658. ZIZIPHUS MAURITIANA Lam. Rhamnaceæ.
(*Z. jujuba* Lam. not Mill.)

From Port Louis, Mauritius. Seeds presented by Mr. G. Regnard. Received December 19, 1917.

Thirty-four varieties received. The following is an extract from a letter from Mr. Regnard:

"If the *Ziziphus* trees are not cultivated in the strict sense of the word, they are to be found in large numbers in the villages inhabited by Indians and Africans in the warmer localities of the island. The fruits are well appreciated, not only by these people but also by Europeans, and are sold in great quantities in the fruit markets during June, July, and August (the cold season). On having fruits gathered from different trees, I have noticed that there are many varieties, probably more than one hundred, of different size, shape, taste, and color. The fruits on ripening may be green, pink, red, or yellow. The majority is of a certain shade of yellow. When overripe, that is, when the fruit softens, all the fruits have the same uniform yellowish brown color.

"The fruits are eaten before they become what I call 'overripe,' and except for some varieties have a very good taste. Usually those fruits which have the lower extremity slightly pointed are considered to be the best, but this is not always the case.

"The tree rarely attains more than 20 feet in height, with a trunk 6 to 8 inches in diameter. It grows all around the island, from sea level to 500 or 600 feet altitude; but it appears, save a few exceptions, that the best products are obtained from the regions where the heat is more regular, because they are sheltered from the winds which blow from the southeast during most of the year."

45625 to 45658—Continued.

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| 45625. 1. | 45632. 8. |
| 45626. 2. | 45633. 9. |
| 45627. 3. | 45634. 10. |
| 45628. 4. | 45635. 11. |
| 45629. 5. | 45636. 12. |
| 45630. 6. | 45637. 13. |
| 45631. 7. | 45638. 14. |
| 45639. 15. "Seeds of a small fruit, long and pointed, excellent to eat."
(<i>Regnard.</i>) | |
| 45640. 16. "A variety with very large fruits, pointed at the lower end,
and of most excellent flavor." (<i>Regnard.</i>) | |
| 45641. 17. | 45650. 26. |
| 45642. 18. | 45651. 27. |
| 45643. 19. | 45652. 28. |
| 45644. 20. | 45653. 29. |
| 45645. 21. | 45654. 30. |
| 45646. 22. | 45655. 31. |
| 45647. 23. | 45656. 32. Large-fruited variety. |
| 45648. 24. | 45657. 33. Large-fruited variety. |
| 45649. 25. | 45658. 34. Mixed varieties. |

45659. CASUARINA SUMATRANA Jungh. Casuarinaceæ.

From Buitenzorg, Java. Presented by the director of the Botanic Garden.
Received December 31, 1917.

"Introduced as a better form of *Casuarina*, forming a larger and more graceful tree than *Casuarina equisetifolia*, which is so commonly used as a street tree in Florida." (*Fairchild.*)

45660. MIMUSOPS KAUKI L. Sapotaceæ.

From Lawang, Java. Seeds presented by Mr. M. Buysman. Received
December 29, 1917.

The genus *Mimusops* is composed of handsome evergreen trees which are cultivated in the Tropics for perfumery, oil, rubber, and other products. This species grows 20 to 35 feet in height, is native to the Malay Peninsula, and is cultivated in the West Indies. The young branches are gummy; the long-petioled leaves, 4 inches in length, are crowded at the ends of the branches; the flowers are clustered on twin or solitary pedicels; and the fruit is an obovoid, smooth berry, up to 1 inch in diameter, and usually four seeded. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2056.)

45661. PRUNUS SERRULATA Lindl. Amygdalaceæ.**Flowering cherry.**

From Jamaica Plain, Mass. Cuttings presented by the Arnold Arboretum.
Received November 16, 1917.

This cherry is well known in our gardens and nurseries in its double forms, which are grown under various names. These double-flowered forms vary in the size of the blossoms and in the depth of the rosy tints that suffuse the

petals. Although 80 years have passed since the first plants were introduced, it would be difficult even now to name a more beautiful or desirable flowering tree. Perfectly hardy, easily accommodated, and never failing at the flowering time, the species combines in itself almost all the qualities that one asks for in an ornamental tree.

Of the new single-flowered varieties not much can yet be said, but although so different from the big double blossoms to which we are so accustomed, the flowers possess all their charm and delicacy of color, and if they are not so large they have an even daintier gracefulness. (Adapted from *The Garden*, vol. 56, p. 300.)

This is apparently the variety *Ochichima*, a form with pale-pink, double flowers of large size. (See *Wilson, Cherries of Japan*, p. 54.)

45662. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Guadelope, French West Indies. Scions presented by Mrs. E. St. George Lough, Trois Rivières Plantation. Received December 31, 1917.

Peach scions imported for experimental purposes.

A freestone peach described as somewhat resembling the peen-to peach in shape and flavor. It is round, however, not flattened, and is reported as being larger and having more "perfume and savor" than the peen-to. It resists decay well, even in the heat of the French West Indies.

For a more complete description, see S. P. I. No. 34131.

45663. STADMANNIA OPPOSITIFOLIA Lam. Sapindaceæ.

From Port Louis, Mauritius. Seeds presented by Mr. G. Regnard. Received December 7, 20, 22, and 31, 1917.

"The fruits make an excellent jelly, very much like that of the quince. This tree grows in a wild state, and the pulp of its fruit, unless made into a jam or jelly, is only fit to be eaten by monkeys." (*Regnard*.)

A large hardwood tree, once frequent in the primeval forests of the island of Mauritius, but now becoming scarce. It has alternate pinnate leaves, dense panicles of inconspicuous flowers, and hard spherical fruits nearly an inch in diameter. (Adapted from *Baker, Flora of Mauritius*, p. 60.)

45664 to 45669.

From Zacuapam, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received December 31, 1917.

45664. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.
(*Sechium edule* Swartz.)

"The chayote is becoming known in the United States as a useful vegetable belonging to the squash family. In some parts of tropical America it is eaten as commonly as are the potatoes in North America and is stewed with meat, creamed, and so on, in the same manner. It has not the food value of the potato, but is more comparable in this respect to the squash. In an effort to extend and improve its culture in this country, varieties are being introduced from as many regions as possible." (*Wilson Popenoe*.)

45665. CAPSICUM ANNUUM L. Solanaceæ. Pimento.

Var. *grossum*. The pimento of tropical America. Dr. Purpus states that this variety is a plant for a hot country and should be planted in a sunny place in light soil.

45664 to 45669—Continued.

45666. *LYCOPERSICON ESCULENTUM* Mill. Solanaceæ. **Cherry tomato.**

Plants of the variety *cerasiforme*. It differs from the ordinary garden tomato in having small fruits, either red or yellow, and leaves which are smaller, grayer, and less dense. The fruits are used for pickles and preserves. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 1931.)

Introduced to test for wilt resistance.

45667 and 45668. *VANILLA PLANIFOLIA* Andrews. Orchidaceæ. **Vanilla.**

45667. "Cuttings of the true vanilla from Misantla, Mexico. Should be planted at the foot of small trees or shrubs, in leaf mold." (*Purpus.*)

45668. "From Zacuapam." (*Purpus.*)

45669. *VANILLA POMPONA* Schiede. Orchidaceæ. **Vanilla.**

"Plants of wild vanilla, which grows in brush woods and half-shady places in the low country at the limits of the tierra caliente. Should be planted at the foot of small trees or large shrubs, in leaf mold." (*Purpus.*)

"A native of Mexico, yielding an inferior quality of vanilla known by the name of 'Vanillon' and 'Vanilloes.' This is claimed to have advantages over proper vanilla, its pods not having a tendency to wilt, as well as being easily cured, whilst the vines are said to flower and fruit three or four times during the year." (*Macmillan, Handbook of Tropical Gardening and Planting*, 2d ed., p. 282.)

45670 to 45691.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received November 16, 1917.

45670. *CASTANEA HENRYI* (Skan) Rehd. and Wilson. Fagaceæ.

Chestnut.

(Cuttings.) A tree, 75 to 100 feet in height, distributed through the valley of the Yangtze River as far west as Mount Omei. It is common in woods on the mountains of western Hupeh and eastern Szechwan. The leaves are green on both surfaces, caudate-acuminate, and broadest below or at the middle. The shoots are dark colored and quite glabrous. The fruit is usually a solitary nut. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, p. 196.)

45671 and 45672. *CORYLUS CHINENSIS* Franch. Betulaceæ. **Hazelnut.**

(Cuttings.) A tree native to western China, which grows to a height of 120 feet. The ovate-oblong leaves are cordate at the base, doubly serrate, and 4 to 7 inches long. The fruit is borne in clusters of four to six. The involucre is constricted above the nuts, with recurved and more or less forked lobes. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 859.)

45671. Vilmorin No. 1200.

45672. Wilson No. 1453.

45673. *CORYLUS HETEROPHYLLA SUTCHUENENSIS* Franch. Betulaceæ.

Hazelnut.

(Cuttings.) A bush, 1 to 4 meters tall and widely distributed in China, having been reported from Szechwan, Hupeh, Kiangsi, and Hunan Provinces. The branches and petioles are sparsely pubescent. The

45670 to 45691—Continued.

involucres are deeply cleft and shorter than the very finely pubescent nutlets. There is a large variation in the involucres and in the pubescence of the leaves, petioles, and branches. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 455.)

45674. × MALUS ARNOLDIANA Rehder. Malaceæ.

(Roots.) A plant which is evidently a hybrid of *Malus floribunda* appeared spontaneously in the Arboretum several years ago and has been named *M. arnoldiana*. This plant promises to remain a smaller tree than *M. floribunda*, but its long, spreading, and arching branches are very graceful and the flowers produced on long stems are more than twice as large as those of its parent. The flowers of this interesting tree are considered by some persons more beautiful than those of any other crab apple. (Adapted from *Arnold Arboretum Bulletins of Popular Information*, Nos. 3 and 22.)

45675. MALUS BACCATA MANDSHURICA (Maxim.) C. Schneid. Malaceæ.

Crab apple.

(Roots.) *Malus baccata mandshurica* is the earliest of the crab apples to open its flower buds in the Arboretum. A native of Manchuria, Chosen (Korea), and northern Japan, it is the eastern form of the better known *Malus baccata*, the Siberian crab apple, which reached Europe more than a century ago and for a long time was one of only two Asiatic crab apples known in western gardens. The Manchurian form as it grows in the Arboretum is a tree 12 to 15 feet tall and broad; the flowers, which are produced in profusion, are pure white, rather more than an inch across, and more fragrant than those of any other Asiatic crab apple. The fruit is round, yellow or red, and not larger than a large pea. This crab apple, which is still rare in this country, for the fragrance of the flowers alone should find a place in all collections. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2871.)

45676. MALUS FUSCA (Raf.) C. Schneid. Malaceæ.

Apple.

(Roots.) A shrub or small tree, sometimes 30 to 40 feet tall, with ovate-lanceolate sharply serrate leaves. The white flowers, an inch in diameter, are borne on slender pubescent pedicels, and appear when the leaves are nearly or quite full grown. The fruit is oblong, three-fourths of an inch or less long, and yellowish or greenish in color. According to Sargent, this tree "grows usually in deep, rich soil in the neighborhood of streams, often forming almost impenetrable thickets of considerable extent, and attains its greatest size in the valleys of Washington and Oregon." The range extends from northern California to Alaska. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2875.)

45677. × MALUS MAGDEBURGENSIS Zimmerm. Malaceæ.

Apple.

(Roots.) *Malus magdeburgensis* is considered to be a hybrid between *M. spectabilis* and *M. dasycphylla*, which was found among a collection of trees planted in the city gardens of Magdeburg and supposed to have been originally imported from Japan. (Adapted from *Möller, Deutsche Gärtner-Zeitung*, vol. 20, p. 254.)

45670 to 45691—Continued.

45678. MALUS NIEDZWETZKYANA Dieck. Malaceæ. **Apple.**

(Roots.) One of the most curious apple trees in the collection, *M. niedzwetzkyana* has deep purplish red flowers and fruit, even the flesh being purple, leaves purple (at least early in the season), and dark bark. It comes from central Asia and is probably a form of *M. pumila*, one of the parents of the common apple tree, as seedlings raised in the Arboretum have sometimes purple but more often green leaves. (Adapted from *Arnold Arboretum Bulletin of Popular Information No. 22.*)

45679. MALUS PRUNIFOLIA RINKI (Koidz.) Rehder. Malaceæ. **Apple.**

(Roots.) It is a tree in its wild state with greenish yellow fruit, sometimes with a reddish cheek, or rarely entirely red, rather longer than broad and not often more than $1\frac{1}{4}$ inches in diameter; it is juicy and has an acid flavor. This tree was early introduced into Japan, where it was formerly cultivated in many forms as a fruit tree. Its cultivation in Japan was given up after the introduction of American and English apple trees and it is now a rare plant there. Judging by the climate where this tree grows naturally in western China, it should prove as hardy as the Siberian *Malus baccata*, which is one of the parents of the hardy race of apples now much cultivated in the extreme north as Siberian crabs; and it is not improbable that by crossing the Rinki with some of these hybrid crabs or with the hardiest varieties of the common apple a race may be obtained more valuable for the cold parts of North America than any of the apples which can now be grown in some of the Northern States and in the northwestern Provinces of Canada. (Adapted from *Arnold Arboretum Bulletin of Popular Information No. 3.*)

45680. MALUS SYLVESTRIS Mill. Malaceæ. **Apple.**

(Roots.) "A wild form of the cultivated apple secured in Turkestan." (*Sargent.*)

45681. MALUS THEIFERA Rehder. Malaceæ. **Apple.**

(Roots.) *Malus theifera* from central and western China is closely related to Hall's crab. It is one of Wilson's introductions through seeds sent in 1900 to Veitch and in 1907 to the Arboretum, where it is now 12 feet high. It has upright, spreading, rather zigzag branches which are densely studded with short spurs which bear numerous clusters of flowers rose red in the bud, becoming pale and almost white when fully expanded. In central China the peasants collect the leaves and from them prepare the palatable beverage which they call red tea. From this fact the specific name is derived. (Adapted from *Arnold Arboretum Bulletin of Popular Information No. 4.*)

45682. MALUS TRANSITORIA TORINGOIDES Rehder. Malaceæ. **Apple.**

(Roots.) This plant looks quite distinct from typical *Malus transitoria* with its larger, partly entire leaves and larger fruit and may turn out to be a distinct species, but as long as we do not know the mature fruits of the type and the flowers of this variety we must rely on the difference in the leaves, which is not sufficient for specific separation, as intergradations seem to exist. (Adapted from *Sargent, Plantae Wilsonianae. vol. 2, p. 286.*)

45670 to 45691—Continued.

45683. PRUNUS MAACKII Rupr. Amygdalaceæ.

(Cuttings.) A Manchurian bird cherry up to 40 or more feet high in a wild state, very distinct through the bark of the trunk being smooth and of a striking brownish yellow color, and peeling like that of a birch. It is different from ordinary bird cherries in the racemes coming on the year-old wood and from the laurels in being deciduous. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 241.)

45684. PRUNUS SERRULATA Lindl. Amygdalaceæ. Flowering cherry.

(Cuttings.) Forma *rosea* Wilson. Cultivated cherry which has been grown at the Arnold Arboretum. It was received from Spath in 1912 as *P. pseudo-cerasus shidaresakura* Koehne.

"Flowers rather small, inodorous, pink, and very double, known to me only as a cultivated plant in this Arboretum. It is fortunate that Koehne's name is a synonym, since in Japanese it signifies hanging cherry and in Japan is applied only to *P. subhirtella* var. *pendula* Tanaka." (*Wilson, The Cherries of Japan*, p. 27.)

45685. PRUNUS THIBETICA Franch. Amygdalaceæ. Plum.

(Cuttings.) An ornamental tree 15 to 20 feet in height, bearing oblong convolute leaves which have crenate margins. The bluish pink flowers appear with the leaves on pedicels one-third to three-fourths of an inch long. Native to western China, where it commonly grows in thickets. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2827.)

45686 and 45687. PYRUS CALLERYANA Decaisne. Malaceæ. Pear.

(No. 556a Wilson.) This is a widely distributed species and, according to Wilson, is common in western Hupeh from river level up to 1,500 meters altitude. It has comparatively small glabrous crenate leaves and small flowers with two, rarely three, styles. The fruit is about 1 to 1.4 centimeters in diameter. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 264.)

45686. Seeds.

45687. Fruits.

See also S. P. I. No. 45586.

45688. PYRUS SERRULATA Rehder. Malaceæ. Pear.

(Fruits.) A tree native to western Hupeh at altitudes from 600 to 1,600 meters.

"This species seems to be most closely related to *Pyrus serotina* Rehder, but differs chiefly in its serrulate, not setosely serrate, generally broader leaves and in the smaller flowers with usually three or four styles and shorter sepals, and in the smaller fruit." (*Sargent, Plantae Wilsonianae*, vol. 2, p. 263.)

45689. RIBES FASCICULATUM CHINENSE Maxim. Grossulariaceæ. Currant.

(Plants and fruits.) "In the shrub collection the leaves of two currants are just turning scarlet [November 1, 1912]. These are *Ribes curvatum* and the Chinese form of *Ribes fasciculatum*. The beauty of the Chinese currant at this season is increased by the bright-red fruits which are still on the branches. It is the only representative of the genus in the collection with fruit which ripens in the autumn and is

45670 to 45691—Continued.

well worth a place in every collection in which handsome autumn fruits are valued." (*Arnold Arboretum Bulletin of Popular Information No. 34.*)

45690 and 45691. *VITIS VINIFERA* L. Vitaceæ.

Grape.

45690. "Cuttings of a wild grape of the *vinifera* type from northern China." (*C. S. Sargent.*)

"This is a very hardy plant, enduring the winters of Boston, Mass., with little injury." (*Peter Bisset.*)

45691. (Plants.) "This grape is largely cultivated in Peking. There are white-fruited and purple-fruited varieties. In Peking the vines are laid down and covered in the winter; at the Arboretum they have so far generally proved hardy and have occasionally produced fruit. This vine may prove valuable to cross with some of the hybrids or varieties of American grapes." (*C. S. Sargent.*)

45692 to 45704.

From France. Scions presented by Mr. Edmond Versin, St. Jean le Blanc, par Orleans, Loiret. Received November 28, 1917.

45692 to 45701. *CORYLUS AVELLANA* L. Betulaceæ.

Hazelnut.

45692. *D'Alger.* This is a well-known hazelnut, and because of its many hundreds of years of cultivation it has received many different names. The bush is of low, much-branching habit, spreading widely by means of suckers. It is a very prolific shrub and is one of the most fruitful of all the varieties of hazelnut. The leaves are of medium size, roundish or oval-elliptic. The nut is medium sized, 20 to 22 millimeters long, and very long pointed. It seldom grows singly, but is found in groups of three to five. The shell is dark brown, later even becoming brownish black. The upper half is covered by a grayish woolly tomentum which becomes stronger toward the tip. The kernel, which has a sweet almondlike taste, is oval and entirely fills the shell. Blooms in midspring; ripens early, from the middle to the end of August, depending on the climate. Older pomological workers state that this nut comes true to seed, but more recent workers state that only about one-fifth of the seed planted comes true to the variety. It is a nut to be universally recommended. (Adapted from *Goeschke, Die Haselnuss, p. 78.*)

Received as *Corylus macrocarpa*.

45693. Received as *Corylus macrocarpa du Bearn.*

45694. Received as *Corylus macrocarpa fertile.*

45695. Received as *Corylus avellana folius aurcis* (golden-leaved filbert).

45696. Received as *Corylus macrocarpa de Brunswick.*

45697. Received as *Corylus macrocarpa à coque tendre.*

45698. *Cob filbert.* "Involucre nearly smooth, longer than the nut, and very slightly cut around the margin; nut large, oblong, and somewhat compressed; shell rather thick, brown; kernel full and of very rich flavor. This is perhaps the best of all the filberts. The tree is a most abundant bearer. Some of the nuts are upward

45692 to 45704—Continued.

of an inch in length, and they have with care been kept for four years. It is only after being kept for some time that their full richness of flavor is obtained. Mr. Hogg says this nut was first brought to the notice of the Horticultural Society by A. B. Lambert about the year 1812. It is improperly called *Kentish Cob*. The true *Cobs* are roundish thick-shelled nuts." (*Thomas, The American Fruit Culturist*, p. 448.)

- 45699. *Emperor*.** This variety was grown in England by Richard Webb, breeder in the Calcot Garden at Reading. A prolific bush of low but strong growth, with small to medium leaves, 9 to 10 centimeters long, round-oval, and narrowed toward the base. The nuts are conspicuously large, 20 to 22 millimeters long, of irregular shape, and grow singly or two or three together. The shell is light brown, with distinct dark-brown stripes, and is softly pubescent near the apex. The large kernel is broadly oval and of good flavor. Blooms rather late; ripens early, late August or early September. This is a very valuable nut which, because of its beauty and heavy bearing, is widely grown. (Adapted from *Goeschke, Die Haselnuss*, p. 60.)

Received as *Corylus macrocarpa*.

- 45700.** Received as *Corylus macrocarpa à gros fruits*.

- 45701.** Received as *Corylus macrocarpa des Anglais*.

- 45702. CORYLUS COLUMNATA L.** Betulaceæ. **Turkish hazelnut.**

The nuts of this species are small and somewhat flattened, with the deeply cut roundish involucre several times longer than the nut. The plant is treelike, with upright branches which are corky when young. The leaves are shiny, becoming broad and pointed as they mature. (Adapted from *Goeschke, Die Haselnuss*, p. 41.)

- 45703. CORYLUS MAXIMA Mill.** Betulaceæ. **Hazelnut.**

Received as *Corylus macrocarpa du Piemont*.

- 45704. POPULUS INCRASSATA Dode.** Salicaceæ. **Poplar.**

A dense tree of irregular habit of growth, with short ascending branches. The appearance of some of the leaves suggests the fossil species *Populus latior* Heer. The pefoliation is ragged, as in the group *Caroliniensis*. Habitat the western portion of North America. This is a species of doubtful validity. (Adapted from *L. A. Dode, Genre Populus*, p. 41.)

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U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
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BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JANUARY 1
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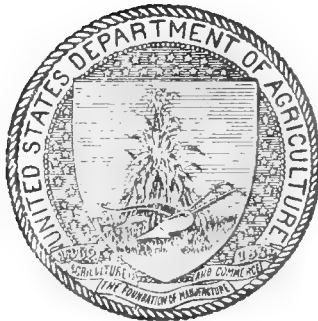
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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JAN- UARY 1 TO MARCH 31, 1918 (NO. 54; NOS. 45705 TO 45971).

INTRODUCTORY STATEMENT.

This fifty-fourth inventory represents a war-time period and is small in numbers, but some very interesting and it is hoped valuable introductions are included in its pages.

Perhaps the most notable collections included are those made by Prof. F. C. Reimer, whose studies of pear-blight and whose search after a resistant species of *Pyrus* are among the most interesting occurrences in the field of plant pathology. Prof. Reimer, at considerable financial sacrifice and personal risk, made a thorough canvass of the pear situation in China and collected as a result of his work what is certainly the most comprehensive assortment of oriental forms and species of the genus *Pyrus* (Nos. 45821 to 45850) which has ever been introduced. He believes it includes the material from which in all probability will be produced, by selection and breeding with the European pears, the varieties resistant to fire-blight which are adapted for stocks because of their freedom from this disease. He thinks from it will come the hardy varieties of pears which in time will be grown in the northern Great Plains region, where pear growing is now impossible, and he finds that a few varieties of these oriental pears are sufficiently good in quality to warrant their use without improvement in those regions where the fire-blight has hitherto made pear growing unprofitable.

Pyrus betulaefolia \times *phaeocarpa* he found growing on dry hillsides, on the plains, and even in ponds where for a large part of the year water covered its roots a foot deep. This hybrid is found from extreme northern China to the Yangtze River. This may be useful in America as a stock, since it is used in this way in China. It is unfortunately not blight resistant, however, but since this disease does not exist, so far as known, in Europe it may be more valuable there.

Pyrus calleryana Prof. Reimer gathered from its northernmost limit, central Chosen (Korea). *Pyrus phaeocarpa* becomes a tree

60 feet in height and 2½ feet in diameter. *Pyrus serrulata*, a species from which, apparently, have originated some of the small-fruited cultivated varieties of central China and which has shown a marked degree of blight resistance, is represented. *Pyrus ussuriensis* is the species of which young trees (from seed which Mr. Frank N. Meyer collected) have shown a higher degree of resistance to blight than any other species yet tested. It is from this that have arisen some of the best cultivated pears of China such as the "Ya Kuang li," a large pear resembling the Bartlett, which compares well in flavor with the best European pears; the "Suan li," a small but very juicy pear of tart flavor; and the "Pai li," a medium-sized lemon-yellow pear of excellent flavor.

The researches on crown-gall and the search for a stock for the stone fruits have revealed the fact that the Japanese mume (*Prunus mume*, Nos. 45876 to 45881) is worthy of careful study, and through the kindness of Prof. Onda a collection of the most promising varieties has been obtained. These include the varieties which are most used by the Japanese for the production of their pickled mume, a kind of pickle which for sourness makes all other pickles seem sweet. There are said to be several hundred varieties of this species (which is classed as an apricot rather than a plum), and a thorough canvass of the various forms should be made.

As the result of many years of plant breeding and selection, Dr. Van Fleet has produced some remarkable varieties of chestnuts of the species *Castanea crenata* and of the Chinese species which Mr. Meyer introduced (*C. mollissima*), which is resistant to the bark disease. He has produced some interesting hybrids between *Castanea crenata* and *C. pumila*, the common chinquapin. These are for trial as orchard trees for the production of table chestnuts (Nos. 45858 to 45866).

In this connection Mr. Meyer's discovery of a shrubby chinquapin (*Castanea sequinii*, No. 45949), which is found on the mountain slopes of central China and which appears to be immune to the bark disease and at the same time better adapted to moist locations, is worthy of mention.

In 1898 Prof. Hansen introduced a Russian variety of quince (*Cydonia oblonga*, S. P. I. No. 1123), which at Murdock, Kans., has proved hardy and which bears excellent fruit, whereas the standard varieties do not fruit there. Budded plants of this variety are being again distributed under Nos. 45889 and 45890.

During the winter of 1917-18, when Mr. Meyer was in Ichang, he made an investigation of the Ichang lemon, which, according to the researches of Swingle, is to be considered as a new species of the genus *Citrus* (*C. ichangensis*). He found that it was used by the

Chinese largely as a "room perfumer," and he remarks in regard to their use of it that "they carry them about to take an occasional smell of them, especially when passing malodorous places." But by the Europeans in Ichang the fruits of this lemon are preferred to the ordinary lemon for making lemonades. Since trees of it in the Changyang region have withstood temperatures of 19° F., it may have special value because of its hardiness. Mr. Meyer's introduction (No. 45931) is a large variety of this remarkable fruit.

The yang-tao (*Actinidia chinensis*) has so far established itself in this country that there are hundreds of plants of it scattered in private places from the southern Atlantic coast to Puget Sound. It has fruited sparingly, but its fruits have decided promise, being of excellent flavor and having good shipping qualities. The introduction by Meyer of a smooth-skinned variety (No. 45946) from the Hupeh Province, which he says "combines the flavors of the gooseberry, strawberry, pineapple, guava, and rhubarb," is not without especial interest at this time.

In the koumé of Zanzibar (*Telfairia pedata*, No. 45923) we may have a valuable addition to the list of tropical table nuts, providing it is a heavy bearer. Through the late Mr. Buysman, who conducted a private plant-introduction garden for many years at Lawang, Java, the first seeds of this curious cucurbit were received. It is a rank-growing tropical liana, covering the trees at the edge of the forests of East Africa. It produces fruits 3 feet long and 8 inches in diameter, bearing over 250 large, flat, oily seeds the size of an almond and of good flavor. Reports on this species have also been sent in by Dr. H. L. Shantz, who saw it during his exploration of East Africa and formed a favorable impression of its qualities.

Little has been done in the way of providing the Tropics with a good table grape, although there are species of *Vitis* which it would seem might easily be developed for this purpose. In *Vitis* sp. (No. 45796), a wild species from the brushwood of the low country of Zacuapam, Mexico, which tastes like a Catawba, and in another small-fruited form (*Vitis tiliaefolia*, No. 45797), both sent in by Dr. C. A. Purpus, we may have species which the plant breeder can use to advantage.

From our collaborator, Dr. L. Trabut, whose remarkable work has won for him the Frank N. Meyer memorial medal for distinctive services in the field of plant introduction, we have received an interesting species of wild rice from West Africa. Unlike the true rice, it sends out rootstocks, and from its character of holding its foliage for several months it converts swampy lands into excellent pastures. It rises to 1½ meters in height and, like our own wild rices, scatters its seeds, making the collection of grain difficult. Chevalier has

classed this *Oryza barthii* (No. 45717) as one of the very best forage plants of West Africa, and it is as such that it is being tried here.

One of the most spectacular introductions of recent years into the Southwest is that of the athel, an African tamarisk (*Tamarix aphylla*, No. 45952), which is considered the best of the Egyptian species both for timber and as a windbreak by Dr. Trabut, from whom the plants originally came. They constitute one of the best of the many gifts of Dr. Trabut to this country. In the Coachella Valley its handsome form is already transforming the landscapes and adding great rows of beautifully shaped trees to the desert. Its rapid growth even exceeds that of the Eucalyptus, and the settlers there are most enthusiastic about its value. To Prof. J. J. Thornber belongs the credit for its introduction in this region, for the trees now in the valley were introduced by him, although in 1899 Mr. Walter T. Swingle secured and shipped in plants noted in our Inventory No. 7 under the name *Tamarix articulata*, No. 3343. Unfortunately, these plants died en route, owing to the recall to the port of departure of the ship on which they were placed and to a consequent delay of three months in reaching this country. The practical utilization of the plant is due to the prompt recognition of its value by Mr. Bruce Drummond, of the Indio Date Garden.

Whether it would be advisable to introduce the gall insect, which Dr. Trabut calls to our attention and which produces on this tamarisk large quantities of galls containing 45 per cent of tannin, is a question requiring careful study.

Mrs. Zelia Nuttall, the noted archæologist of Mexico, whose love for plants has led her to investigate the vegetables used by the Aztecs, calls our attention to three forms of a remarkable new vegetable, a species of *Chenopodium* named by Mr. Safford in her honor (*Chenopodium nuttalliae*, Nos. 45721 to 45723). The large branching inflorescences of this rapid-growing plant, gathered before the seeds ripen, are cooked as a vegetable. According to Mrs. Nuttall, it forms a delicious potherb of peculiar delicacy. Since it grows rapidly and can be cultivated in our Southwest, it deserves special consideration.

The success of the roselle (*Hibiscus sabdariffa*) as a source of brilliant jelly-making material and an excellent substitute for cranberry sauce makes Wester's two Philippine varieties of it of special interest (Nos. 45800 and 45801).

Although the mulberry has hardly any real rank in America as an orchard fruit, to drop it out of our fence corners and yards and deprive our children of the delights of coloring their faces and their clothes with its brilliant juice would be a pity. *Morus acidosa* (No. 45708) is a bushy mulberry from the Provinces of Hupeh and Szechwan, which when I first saw it in the Arnold Arboretum was

covered with quantities of berries with a tart flavor quite different from the supersweetness of the ordinary mulberries. It deserves a place in our dooryards where there is not room for a mulberry tree.

Of new or little-known ornamentals the following seem to promise unusual interest: A gorgeous yellow-flowered shrub from New Zealand (*Pomaderris elliptica*, No. 45892); a Chinese Gordonia from Hongkong (*G. axillaris*, No. 45718); the beautiful *Amygdalus triloba* (No. 45727), a flowering almond which ranks as one of the most beautiful of blooming shrubs; *Rosa helenae* (No. 45729) from western Hupeh, where it forms thickets 6 meters across and as many meters high, which are covered with masses of fragrant white blooms, according to its discoverer, Mr. E. H. Wilson; *Hydrangea paniculata praecox* (No. 45733), the seeds of which Prof. Sargent collected in Hokkaido, Japan, where it makes a growth of 20 feet in height; and *Acokanthera spectabilis* (No. 45748), a flowering shrub from southwestern Africa sent in by Mr. Walsingham, of Cairo, which has pure-white, scented flowers borne in short, dense cymes.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels, while the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Miss Esther A. Celander.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., August 19, 1921.

INVENTORY.¹

45705 to 45711.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received January 2, 1918.

45705. *COTONEASTER FRANCHETI* Bois. Malaceæ.

A very ornamental shrub from Yunnan Province, China, remarkable for its graceful form, persistent foliage, and brilliant red fruits. The ovate leaves, about $1\frac{1}{2}$ inches long, green above and silvery hairy beneath, persist almost throughout the winter. The drooping branches, clothed when young with white hairs which become brown with age, are abundantly covered with orange-red oblong fruits, half an inch in length, making the plant extremely beautiful for massing effects or as a bush. The white flowers are in corymbs of 5 or 10. The plant is easily cultivated, will flourish in any soil, and requires only an airy exposure for abundant fruitfulness. It can be multiplied easily by seeds or cuttings. (Adapted from *Revue Horticole*, vol. 79, p. 256.)

45706. *COTONEASTER HORIZONTALIS PERPUSILLA* C. Schneid. Malaceæ.

This ornamental plant, a native of China, is one of the most charming and distinct of all hardy shrubs; it has a marked flat-distichous mode of growth. In open ground, it grows about 3 feet high, producing flat, table-like branches densely clothed with tiny, orbicular, deep lustrous-green deciduous leaves. The young wood is covered with a thick brown wool. The small, abundant flowers are pink-white, and although the plant is very pretty when in bloom, it attracts more notice when in fruit; the berries are small, very plentiful, and scarlet when ripe. This shrub is very pretty, growing on ledges of a rockery or at the foot of a wall where it will grow 6 or 7 feet high flat against the wall. It can be increased by both cuttings and seeds. (Adapted from the *Gardeners' Chronicle*, vol. 32, ser. 3, p. 91.)

45707. *COTONEASTER ZABELI* C. Schneid. Malaceæ.

An ornamental bushy shrub up to 7 feet in height, with corymbs of pink or pinkish flowers which are followed by clusters of red fruits. This is the common cotoneaster of the thickets in western Hupeh. The

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received when introduced by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in this inventory will undoubtedly be changed in many cases by the specialists interested in the various groups of plants, to bring the forms of the names into harmony with recognized American codes of nomenclature.

oval-elliptic leaves are usually rounded and emarginate or mucronulate, but occasionally acute; often all forms are found on the same shoot. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 1, p. 166.)

45708. *MORUS ACIDOSA* Griffith. Moraceæ.

Mulberry.

Usually a broad shrub from 3 to 16 feet in height, but occasionally forming a tree up to 25 feet in height. It is found in the Provinces of Hupeh and Szechwan, China. The leaves are very variable in size and shape and are not used for feeding silkworms. The fruits are dark red or shining black and palatable. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, p. 300.)

45709. *PRUNUS SERRULATA PUBESCENS* Wilson. Amygdalaceæ.

Flowering cherry.

"At its best this variety is a tree of moderate size, from 13 to 16 meters tall and from 1 to 2 meters in girth of trunk, but I saw very few such large trees in Japan. In habit and in the size and color of the flowers it agrees closely with var. *spontanea* (white or pink, from 1.5 to 2.5 centimeters, usually 2 centimeters, in diameter). The branchlets as a rule remain gray for a longer period and do not assume the characteristic chestnut-brown color until after several years." (*Wilson, The Cherries of Japan*, p. 35.)

45710. *PRUNUS TOMENTOSA* Thunb. Amygdalaceæ.

This shrub, 6 to 8 feet in height, appears perfectly hardy and vigorous; it flowers and fruits well at the Arnold Arboretum and withstands perfectly the rigorous winters at Ames, Iowa; its fruit buds are hardy and its flowers endure severe frost without injury. It forms a broad, spreading, twiggy bush of numerous branches rising from the ground and clothed with branches to the base. These lower branches, where they touch the moist ground, often send out roots and form independent plants. The bark is a gray or bronzy brown, smooth at first, but finally scaling off laterally in thin flakes like the bark of the yellow birch. The downy gray young branches are thickly covered with buds, from which a profusion of flowers and leaves appear simultaneously in early spring. The sessile flowers, crowded in the axils of the leaves, are smaller than those of the common cherry and are white or light rose in color. The leaves are ovate, serrate, sparingly hairy above, densely and softly so beneath, with long, slender, persistent stipules. The red cherries, half an inch in diameter, are slightly covered with very short, inconspicuous hairs; the firm, juicy, pleasantly acid flesh is without the noticeable staining qualities characteristic of some of the wild cherries and plums. With careful selection and cultivation this little cherry might prove of some economic value. Native to northern China. (Adapted from *Garden and Forest*, vol. 5, p. 58.)

45711. *PRUNUS TOMENTOSA ENDOTRICHIA* Koehne. Amygdalaceæ.

This variety differs from *Prunus tomentosa* in that the leaves are elliptic to oblong, with a very short petiole, and the fruit is dark red, about half an inch in diameter.

45712. *CARICA PAPAYA* L. Papayaceæ.

Papaya.

From the city of Panama, Panama. Presented by Mr. B. H. A. Groth. Received January 2, 1918.

Papaya seeds imported for experimental purposes.

"There are included both yellow and pink-fleshed varieties of many sizes and shapes." (*Groth.*)

45713 to 45716. PRUNUS spp. Amygdalaceæ.

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received January 2, 1918.

Introduced for experimental use by the Office of Horticultural and Pomological Investigations.

45713. PRUNUS AVIUM L.

Mazzard cherry.

A common species often used as a stock and also, certain forms at least, as an ornamental.

45714. PRUNUS ARMENIACA L.

Apricot.

45715. PRUNUS CERASIFERA MYROBALANA (L.) C. Schneid.

Myrobalan plum.

The Myrobalan plum (a popular stock for *domestica* plums) is now regarded as a culture form of *Prunus cerasifera*, though it is often held as a distinct species under the name of *P. myrobalana*.

45716. PRUNUS DOMESTICA L.

Plum.

A variety called "Julian" by Vilmorin-Andrieux & Co. It seems not to be the variety *juliana* as understood in this country, however.

45717. ORYZA BARTHII Cheval. Poaceæ.

Rice.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received January 3, 1918.

An interesting African species, used for both human food and forage. In habit it differs markedly from the cultivated rices, throwing out rootstocks to a length of several decimeters, with scattering stems rising from them. The foliage remains green for two or three months and converts many swampy lands into excellent pastures. The stems rise to a height of 1 to 1½ meters—even higher in deep water. The panicle is short; and the ripe grain, which is small, falls out of the husk very easily. For this reason it is impossible to cut the heads for thrashing without losing most of the grain. To obviate this difficulty, the aborigines, in those regions where the plant is common, paddle among the ripe grain in their canoes, shaking the panicles over a small calabash, or basket, held in one hand. Most of the grain falls into the basket and is saved. If it is late in the season, the ripe grain will float on the surface of the water and that which falls outside of the basket may be recovered.

This species is not cultivated; in fact, the grain has very limited use, owing to the difficulty in harvesting it. It is sold at a very high price, however, and is considered a product of unusually choice quality.

The grain is not so important, from an economic standpoint, as the forage which the plant furnishes. It is considered one of the very best forages of West Africa. (Adapted from *Chevalier, Bulletin du Muséum National d'Histoire Naturelle, 1910, No. 7, p. 406.*)

45718 to 45720.

From Hongkong, China. Presented by Mr. W. J. Tutcher, Botanical and Forestry Department. Received January 3, 1918.

45718 to 45720—Continued.

45718. *GORDONIA AXILLARIS* (Roxb.) Szyszyl. Theaceæ.
(*Camellia axillaris* Roxb.)

A handsome evergreen shrub from China, which succeeds very well in a good conservatory [in England], but is rather more sensitive to cold than the other camellias. It bears large, yellowish white, axillary flowers, with obcordate, partly crumpled petals and many yellow stamens of unequal length, connected at the base, falling off with and holding the petals together. The leaves are a beautiful dark glossy green; the lower are serrate, the upper quite entire. (Adapted from *Curtis's Botanical Magazine*, pl. 2047.)

For an illustration of this tree in its native habitat, see Plate I.

45719. *PTEROCARPUS INDICUS* Willd. Fabaceæ.

Padouk. A tall tree with ascending glabrous branches, compound leaves 6 to 9 inches long, leaflets 2 to 4 inches long, yellowish flowers in large terminal or axillary panicles, and an orbicular pod 2 inches broad. It is distributed through the Malay Archipelago, the Philippines, and China. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 239.)

Macmillan, in his "Handbook of Tropical Gardening and Planting," lists this species as a shade tree suitable for low, moist regions (annual rainfall 70 inches or more). He also lists it as a tree the wood of which is valuable for timber.

45720. *TUTCHERIA SPECTABILIS* (Champ.) Dunn. Theaceæ.

A handsome, ornamental small tree or shrub, indigenous to the island of Hongkong. The leaves are alternate, short petioled, coriaceous, and shining. The flowers are about 2½ inches in diameter, usually having seven white, roundish obovate petals. The fruit is the size of a small apple, retaining at the base the persistent sepals and containing several fairly large seeds. The plant flowers in May and fruits in November. (Adapted from *Champion, Transactions of the Linnean Society*, vol. 21, p. 111.)

45721 to 45723. *CHENOPODIUM NUTTALLIAE* Safford. Chenopodiaceæ. **Huauhtzontli.**

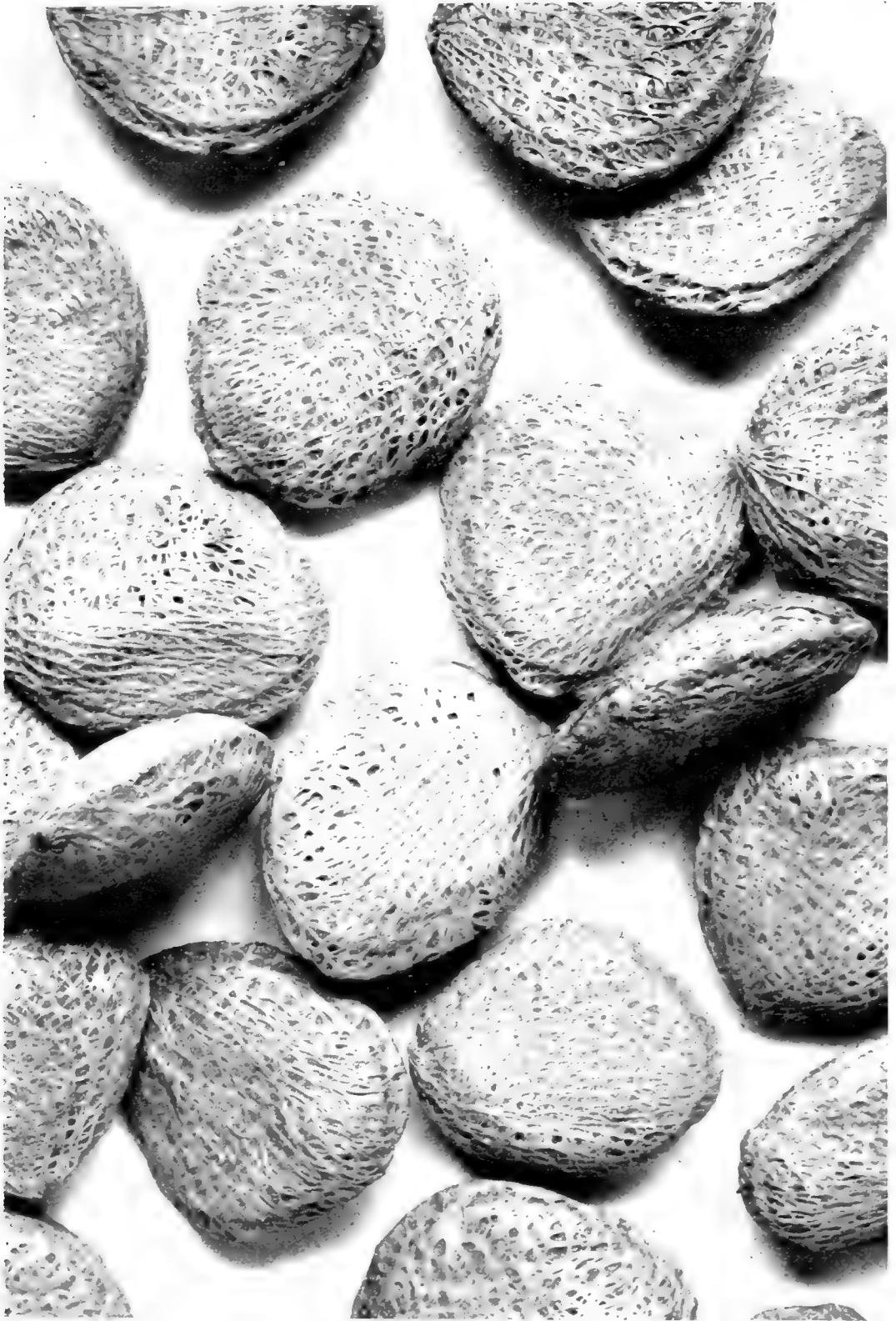
From Mexico. Presented by Mrs. Zelia Nuttall, Casa Alvarado, Coyacan, City of Mexico. Received January 4, 1918. Quoted notes by W. E. Safford.

45721. "*Xochihuauhtli* (flowering huauhtli). A plant cultivated near the city of Mexico for the sake of its prolific branching inflorescences, which are gathered before they are quite mature, while the seeds are still soft, and cooked with other ingredients as a vegetable. This variety, with yellowish or pale-brown, discoid seeds, is the most popular. The inflorescences are known by the Aztec name *huauhtzontli*, signifying "huauhtli heads." Botanically the plant is closely allied to *Chenopodium paganum* Reichenb. and *C. album* L. It is quite distinct from *C. quinoa* Willd., the celebrated food staple of the Peruvian highlands; and it must not be confused with the plant called *michihuauhtli* (fish-egg huauhtli), which is a white-seeded *Amaranthus*, not a *Chenopodium*."



A HANDSOME FALL-BLOOMING, BROAD-LEAVED EVERGREEN FROM SOUTHERN CHINA. (*GORDONIA AXILLARIS* (ROXB.) SZYSZYL, S. P. I. NO. 45718.)

This large-flowered evergreen shrub or small tree is of particular value, since so few trees bloom in late summer and fall. The large, shining, dark-green leaves and creamy white flowers, 2 to 3 inches across, are very attractive and should be a welcome addition to the gardens of the Southeastern States. For parks and cemeteries in this section it may prove of unusual value. There are only 16 known species of *Gordonia*, 2 of which are native to southeastern North America and the others native to southeastern Asia and the Malay Archipelago. (Photographed by E. H. Wilson, No. 391, near Kiating, Szechuan, China, October 5, 1908.)



KOUMÉ NUTS FROM ZANZIBAR. (*TELFAIRIA PEDATA* (J. E. SMITH) HOOK.,
S. P. I. No. 45923.

These nuts are produced in a large gourdlike fruit 3 feet long and a foot in diameter. Each gourd contains 200 of these seeds. The vine which bears them is a tropical, rank-growing cucurbit which climbs to the top of forest trees—a regular liana. In East Africa the koumé nuts are used by Europeans as table nuts and for flavoring cakes, and a sweet, pleasant-tasting edible oil is extracted from them. They have been seriously considered as a source of vegetable oil, but the bitter inner skin surrounding the oily kernel and the hard nature of the shell are obstacles to be overcome before they are eligible for oil-producing purposes. As a decorative screen for the edge of the forest and because of its edible nuts, it is worthy of study by tropical horticulturists. (Photographed by E. L. Crandall, October 1, 1929, from seeds sent in from East Africa by Dr. H. L. Shantz; P26505FS.)

45721 to 45723—Continued.

45722. "*Tlilhuauhtli* (black huauhtli). A plant used by the Mexicans as a potherb, possibly the original form from which the pale-seeded *xochihuauhtli* has been developed by cultivation. Like the latter, the immature inflorescence (*huauhtzontli*, or huauhtli heads) is used for food. The seeds of this variety, discoid in form with the periphery crenated, resemble very closely those of *Chenopodium album* and *C. paganum*. The plant should not be confused with the common forms of *Amaranthus*, which are used when young by the Mexicans as potherbs and which have jet black, very highly polished seeds."

45723. "*Tlapalhuauhtli* (red huauhtli). A variety of *xochihuauhtli* having reddish or rose-colored seeds. Like the yellow or pale-brown variety, they are in the form of disks with the periphery distinctly crenulate and differ decidedly from *Chenopodium quinoa*, of the Peruvian highlands, to which they are botanically related. The prolific, branching inflorescences are gathered before the seeds are mature and cooked with other ingredients as a vegetable. This plant must not be confused with the sacred *michihuauhtli* of the Aztecs, which is not a *Chenopodium*, but a white-seeded *Amaranthus*."

45724 to 45726.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received January 5, 1918.

45724. *ACACIA SCORPIOIDES* (L.) W. F. Wight. Mimosaceæ.
(*A. arabica* Willd.)

A tree which varies greatly in size in different districts. The leaves are compound, consisting of 10 to 30 pairs of linear-oblong leaflets 5 to 6 centimeters long. The flowers are borne in clusters of two to six in each upper axil; the petals are almost entirely united and twice as long as the calyx. The pod is linear, straight, or slightly curved. (Adapted from *Muschler, A Manual Flora of Egypt*, p. 460.)

The gum which exudes from the branches of this tree is used as a local application, being soothing to irritated or inflamed mucous membranes. It possesses, however, little medicinal value of its own, its principal use being as a vehicle for more powerful remedies. (Adapted from the *National Standard Dispensatory*, p. 6.)

45725. *CROTALARIA* sp. Fabaceæ.

These were sent in as blue flowered. They agree closely with *C. juncea* L., which is yellow flowered.

45726. *DODONAEA VISCOSA* (L.) Jacq. Sapindaceæ.

"A very interesting hedge plant which is beautifully dense and green, responds to the shears perfectly, and when taken in hand early makes a perfectly compact wall clear to the ground. The seedling plants form a rather deep taproot and must be transplanted with some care on that account. This is one of the most perfect tropical hedge plants I have ever seen. The shrub is called *tatta* by the natives." (*Prof. S. C. Mason*.)

45727 to 45729.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received January 8, 1918.

45727. *AMYGDALUS TRILOBA* (Lindl.) Ricker. Amygdalaceæ.

(*Prunus triloba* Lindl.)

Flowering almond.

One of the most beautiful of all hardy flowering shrubs; it is covered with a profusion of pink and white flowers and will thrive in almost any good garden soil, either as a bush in the open or trained to a wall. It may be planted at any time during the winter, and once it has filled its allotted space it should be closely pruned each spring immediately after blooming. The flowers are borne on the young wood; hence, by removing this promptly at the time stated, vigorous new shoots are produced for flowering the following year. (Adapted from *The Garden*, vol. 79, p. 17.)

45728. *COTONEASTER FOVEOLATA* Rehd. and Wils. Malaceæ.

"*Cotoneaster foveolata* is a tall shrub with black fruit and leaves which late in the autumn turn to brilliant shades of orange and scarlet. For its autumn foliage this plant might well find a place in every garden." (*Arnold Arboretum Bulletin of Popular Information* No. 50.)

45729. *ROSA HELENÆ* Rehd. and Wils. Rosaceæ.

Rose.

"*Rosa helenæ* is very abundant in rocky places from river level to 1,500 meters everywhere in western Hupeh and eastern Szechwan, but it has not yet been reported from farther west. In wayside thickets and by the banks of streams it forms tangled masses often 6 meters tall and as much through, and in the margins of woods it rambles over small trees. When covered with masses of its white fragrant flowers this rose is very beautiful. It has proved quite hardy and has flowered profusely at the Arnold Arboretum." (*Sargent, Plantae Wilsonianæ*, vol. 2, pt. 2, p. 311.)

45730 and 45731.

From the city of Panama, Panama. Plants presented by Sr. Ramon Arias-Feraud. Received January 9, 1918.

45730. *CEPHAELIS* sp. Rubiaceæ.

"Obtained in the Chiriqui Mountains." (*Arias-Feraud*.)

"*Raicilla*, or *ipecacuana*. A shrub 8 to 16 inches high, with ascending or erect simple stem and somewhat creeping root. It is one of the sources of the medicinal ipecacuana. The typical plant grows in Peru, but specimens of closely allied or identical species from Central America are in the economic collection of the United States Department of Agriculture.

"Roots and stems only were received, so that it is impossible to identify this plant with certainty." (*W. E. Safford*.)

45731. *SMILAX OFFICINALIS* H. B. K. Smilacaceæ.

Sarsaparilla.

"Obtained in the Chiriqui Mountains." (*Arias-Feraud*.)

"*Chiriqui zarzaparilla*. A climbing plant with square stem, armed along the angles with triangular prickles resembling those of a rose. Leaves glabrous, often a foot long, variable in form, often triangular or oblong, acute at the apex, cordate or somewhat auriculate at the base, with two or three longitudinal nerves on each side of the midrib; petioles

45730 and 45731—Continued.

bearing a pair of long tendrils some distance from the base. Flowers in stalked umbels. This species has been collected in Honduras. It bears a certain resemblance to the Mexican *Smilax medica* Schlecht. et Cham. in its much larger leaves, distinctly angled stems, and stouter spines. It is very distinct from the species of smilax recently received from Jamaica. The roots are of a cinnamon-brown color and are said to be more amylaceous than the 'Jamaica sarsaparilla' of commerce. It is one of the principal sources of sarsaparilla." (W. E. Safford.)

45732. ORYZA SATIVA L. Poaceæ.**Rice.**

From Nanhsuchou, Anhwei Province, China. Presented by Mr. J. Lossing Buck, Nanhsuchou Agricultural Experiment Station. Received January 10, 1918.

"A bearded variety called 'fragrant rice' by the Chinese. It brings three times the price of other rice on the market. It is grown in a restricted area about 20 miles north of Nanhsuchou." (Buck.)

45733. HYDRANGEA PANICULATA PRAECOX Rehder. Hydrangeaceæ.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received January 11, 1918.

"There are two forms of this hydrangea with perfect and ray flowers, and one of these, variety *praecox*, is just coming into flower [July 5]; and the other, variety *tardiva*, will not be in flower for several weeks. There are three plants of the variety *praecox* in the collection, differing in the size of the flower clusters and in the size of the ray flowers. The handsomest and the earliest of these was raised from seeds collected by Prof. Sargent in Hokkaido, where it grows into a small tree sometimes 20 or 30 feet tall." (Arnold Arboretum Bulletin of Popular Information No. 28.)

45734 to 45745. ZEA MAYS L. Poaceæ.**Corn.**

From Peru. Received through Mr. William F. Montavon, American commercial attaché, Lima. Received January 4, 1918. Quoted notes by Mr. E. B. Brown, of the Office of Corn Investigations.

"Varieties of the flour type introduced for experimental and breeding work."

45734. No. 1. *Rosa subido*, Sapallanga. "A purple-tinged variety."

45735. No. 17. *Colorado Jaspeado*, Churcampa. "A strawberry-colored or calico-colored variety."

45736. No. 22. *Guindo*, Marcaballe. "A red variety."

45737. No. 23. *Plomo Jaspeado*, Sicaya. "A mottled-purple variety."

45738. No. 11. *Encarnado*, Paucarbamba. "A strawberry-colored or calico-colored variety."

45739. No. 3. *Beata*, Sicaya. "A mottled-purple variety."

45740. No. 25. *Negro*, Huanchos. "A dark reddish purple variety."

45741. No. 24. *Polvo de Oro*, Colcabamba. "A golden-brown variety."

45742. No. 28. *Blanco Perlas de la Reina*, Acobamba. "A white variety."

45743. No. 16. *Colorado Oscuro*, Acostambo. "A red variety."

45744. No. 10. *Sangre de Toro*, Surcubamba. "A dark-red variety."

45745. No. 41. *Flor de Retrama*, Chongos. "A yellow variety."

45746 and 45747. PYRUS spp. Malaceæ.**Pear.**

From Stotts Station, D. C. Presented by Mr. Bernard F. Joy. Received January 15, 1918.

45746. PYRUS sp.

"A seedling pear of the oriental type, with small, hard, roundish fruit, found on the place of Mr. Bernard F. Joy, Stotts Station, D. C., near the Eastern Star Home. Foliage glossy and leathery; wood clean, smooth, and bright; growth vigorous; tree very fruitful and has never blighted; fruit about the size of a walnut, hard and gritty, practically worthless; may be valuable as a resistant stock. According to Mr. Joy, this tree came with a lot of varieties he purchased about 8 or 10 years ago. More than likely it was a budded or grafted tree, and the bud or graft failed to grow." (*B. T. Galloway.*)

45747. PYRUS sp.

"A seedling pear of the oriental type, with large, roundish, apple-shaped fruit; found on the place of Mr. Bernard F. Joy, Stotts Station, D. C., not far from the Eastern Star Home. A vigorous tree which so far has not been subject to blight. The fruit is woody and gritty, but quite sweet. The tree has a clean habit and may prove valuable as a stock." (*B. T. Galloway.*)

45748. ACOKANTHERA SPECTABILIS (Sond.) Benth. Apocynaceæ.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received January 5, 1918.

A large shrub, native to the western districts of South Africa from Albany to Port Natal, growing on wooded sand hills near the sea. The glabrous branches are stout, green, and obscurely angled. The coriaceous, elliptic leaves are 3 to 5 inches long and narrowed into a very short petiole. The pure white, sweet-scented flowers borne on very short pedicels in densely fascicled short cymes make the plant very beautiful at flowering time. In fact, so dense does the inflorescence become that it often appears as a globose head near the top of the branch. Some of the natives are said to consider this plant poisonous. (*Adapted from Curtis's Botanical Magazine, pl. 6359.*)

45749. COLOCASIA ESCULENTA (L.) Schott. Araceæ.**Taro.**

From Okitsu, Japan. Tubers received from Prof. T. Onda, of the Imperial Agricultural College. Received January 15, 1918.

"*Kinu-katsugi (Yego-imo)*. A Japanese taro of the dasheen type, the tubers of which are similar in appearance to most other varieties received from that country. In comparison with the Trinidad dasheen the cormels, or lateral tubers, are small, moist when cooked, and lacking in flavor. However, this variety is considered one of the best grown in Japan." (*R. A. Young.*)

45750 to 45754.

From Lavras, Minas Geraes, Brazil. Presented by Dr. Benjamin H. Hunnicutt, Director da Escola Agricola de Lavras. Received January 7, 1918.

45750. MYRCIARIA CAULIFLORA (Mart.) Berg. Myrtaceæ. Jaboticaba.

"One of the best indigenous fruits of Brazil and, at the same time, one of the most curious and interesting, owing to its habit of producing its fruits directly upon the trunk and larger branches (cauliflory). Several

45750 to 45754—Continued.

species are grown under the name of *jaboticaba*; they are still somewhat confused botanically, but it appears that most of the plants common in cultivation belong either to *Myrciaria cauliflora* or *M. jaboticaba*, fruits of the latter being distinguishable from those of the former by the presence of a slender stem.

"The *jaboticaba* occurs in southern Brazil, both wild and cultivated. It is a very handsome tree, reaching a height of 35 or 40 feet, with a dense dome-shaped crown. The leaves are small, lanceolate, and light green in color; flowers white, with four petals and a conspicuous tuft of stamens. The fruits are produced in the greatest abundance and are the size of large grapes, with a tough leathery skin, juicy white pulp of rather acid aromatic flavor, and two to four flattened oval seeds. The resemblance between the *jaboticaba* and some of the grapes of the Muscadine group, e. g., James, is very striking, not only in general appearance but also in flavor.

"The *jaboticaba* prefers a soil that is rich and deep; it is rather slow of growth, coming into bearing after six or eight years. It withstands slight frosts and gives promise of being successful in southern Florida and perhaps also in sheltered locations throughout southern California. At the present time seed propagation is the only means of multiplication which is commonly employed, but inarching or some other means of propagation should be utilized to perpetuate good varieties." (*Wilson Popenoe*.)

45751. SOLANUM BULLATUM Vell. Solanaceæ.

Capoeira branca. An interesting plant which grows on the rolling prairies of the State of Minas Geraes, Brazil, and which is said to have unusual value for feeding live stock, especially horses.

Analyses made by the Bureau of Chemistry, United States Department of Agriculture, show that this plant contains an unusual quantity of protein. The percentages shown by these analyses are as follows: Moisture—leaves, 8.36; branches, 7.04. Ether extract—leaves, 2.29; branches, 0.59. Protein—leaves, 20.88; branches, 14.06. Crude fiber—leaves, 28.03; branches, 37.45.

45752. STRYPHODENDRON BARBATIMAM Mart. Mimosaceæ.

"A small leguminous tree which occurs commonly on the plains of the State of Minas Geraes and is said by Pio Correa to be distributed from Para in northern Brazil to Sao Paulo in the southern part of the country. The bark contains a high percentage of tannin and is known as *casca da virgindade*; the seeds are said to be poisonous and the leaves to have medicinal qualities. It is the bark, however, that seems to have economic interest, being considered of value for use in tanning. According to Brazilian authorities it contains as high as 40 per cent of tannin; an analysis made by the Bureau of Chemistry, United States Department of Agriculture, gave the following percentages: Total dissolved solids, 31.6; soluble solids in cold water, 28.6; nontannins, 6.7; tannins, 20.1." (*Wilson Popenoe*.)

45753 and 45754. ZEA MAYS L. Poaceæ.**Corn.**

45753. Typical yellow flint from Brazil.

45754. A white variety of the flour type.

45755. ZEA MAYS L. Poaceæ.**Corn.**

From Caracas, Venezuela. Presented by Mr. Preston McGoodwin, American Minister. Received January 8, 1918.

A native white corn of the flour type. This corn is planted widely in Venezuela and is exported in large quantities.

45756. CHAYOTA EDULIS Jacq. Cucurbitaceæ.**Chayote.**

(*Sechium edule* Swartz.)

From Zacuapam, Mexico. Fruits presented by Dr. C. A. Purpus. Received January 3, 1918.

"The chayote is becoming known in the United States as a useful vegetable belonging to the squash family. In some parts of tropical America it is eaten as commonly as are potatoes in North America and in the same manner: Stewed with meat, creamed, and so on. It has not the food value of the potato, but is more comparable in this respect to the squash. In an effort to extend and improve its culture in this country, varieties are being introduced from as many regions as possible." (*Wilson Popenoe*.)

45757 to 45765. ZEA MAYS L. Poaceæ.**Corn.**

From Peru. Procured by Mr. William F. Montavon, American commercial attaché, Lima. Received January 10, 1918. Quoted notes by Mr. E. B. Brown, of the Office of Corn Investigations.

"Varieties of the flour type introduced for experimental and breeding work."

45757. No. 20. *Punso*, Huarnancaca. "A dark-red variety."

45758. No. 33. *Flor de Granada*, Pucara. "A purple variety."

45759. No. 21. *Café con Leche*, Huayuca. "A coffee-with-milk colored variety."

45760. No. 6. *Rosa Bajo*, Sapallanga. "A purple variety."

45761. No. 2. *Crema*, Chongos. "A yellow variety."

45762. No. 32. *Granada*, Salcabamba. "A purple variety."

45763. No. 13. *Misto*, Huarnancaca. "A variegated variety."

45764. No. 8. *Pecho de Paloma*, Chupaca. "A purplish and mottled variety."

45765. No native name. "A purple and yellow variety."

45766. ELAEIS GUINEENSIS Jacq. Phœnicaceæ.**Oil palm.**

From Buitenzorg, Java. Presented by Mr. P. J. S. Cramer, chief, Plant Breeding Station. Received January 23, 1918.

This palm is very important economically. The fruit is used by the natives for food; an intoxicating drink is made from the juice of the stem; the leaf-stalks and leaves are used for thatching the native houses; and the fleshy outer layer and the kernels of the fruit each yield a commercial oil—that from the fleshy part being the ordinary palm oil used in the manufacture of soap and candles and that from the kernels being the white or nut oil used for making margarine or artificial butter. It is a native of tropical West Africa and, both wild and in cultivation, occurs over immense areas. (*Adapted from Macmillan, Handbook of Tropical Gardening and Planting, p. 538.*)

Messrs. Dorsett, Shamel, and Popenoe, in Department of Agriculture Bulletin No. 445, mention the uses of this tree in Brazil. In regard to the oil from the pulp they say: "Dendé oil [as it is there called] is an important food prod-

uct, entering into the preparation of a number of dishes, some of which, such as vatapá, are considered peculiar to the region. While utilized by all classes of people, its greatest popularity is among the negroes, long familiarity having made dendé oil almost as indispensable to them as olive oil is to the Spaniard."

45767. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ.

Ma-yuen.

From Soochow, China. Presented by Prof. N. Gist Gee, Soochow University.
Received January 10, 1918.

This variety might be called the cultivated edible *Job's-tears* and includes many forms, all of which are characterized by having a thin, loose, easily broken shell. They are often longitudinally striated and in many examples are constricted at the base into what is called an annulus. In the central provinces of India, among the aboriginal tribes, this grain forms an important article of food. In Japan, where the plant has been introduced, the seeds are pounded in a mortar and eaten as meal. (Adapted from *The Agricultural Ledger*, No. 13, p. 217.)

45768. JUGLANS CATHAYENSIS Dode. Juglandaceæ.

From Rochester, N. Y. Presented by Mr. John Dunbar, Assistant Superintendent of Parks. Received January 22, 1918.

A deciduous tree, native to central, western, and southwestern China. At low altitudes it forms a bushy tree 15 to 30 feet high, flowering and fruiting when 8 to 10 feet high. In the woods and forests it occasionally makes a tree 40 to 70 feet high. The leaves on young plants are often a yard long, rivaling those of *Ailanthus* and *Cedrela*. The fruits are produced in clusters of 6 to 10 and are $1\frac{1}{2}$ to $1\frac{3}{4}$ inches long. The seeds are sweet and pleasantly flavored. (Adapted from *Gardeners' Chronicle*, 3d ed., vol. 50, p. 189.)

45769. × EUCALYPTUS TRABUTI Vilm. Myrtaceæ. Eucalyptus.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received January 21, 1918.

"A hybrid between *Eucalyptus botryoides* and *E. rostrata* found in sowing seeds from a tree of the former species which stood near one of the latter. Always tends to revert to the male parent. It is the first undoubted *Eucalyptus* hybrid, and the existence of hybrids in this genus has been denied by Baron Ferdinand Mueller. This hybrid is one of the most vigorous trees of the genus, and in a nursery row at the Mustapha Experiment Station it has crowded out the pure species. The beautiful red wood is suitable for furniture." (*Trabut*.)

45770 to 45773.

From Cairo, Egypt. Presented by Mr. W. Carl McQuiston. Received January 24, 1918.

45770 and 45771. CUCUMIS MELO L. Cucurbitaceæ. Melon.

Introduced for varietal studies.

45770. De Cavillon.

45771. Egyptian sweet.

45772. CUCURBITA PEPO L. Cucurbitaceæ. Vegetable marrow.

A garden product much prized in Europe, although little known in this country. It thrives well, however, when grown here. The following account of the culture and uses of the plant, taken from *Gardening Illustrated*, is quoted in Bailey, *Standard Cyclopedia of Horticulture*, p. 2960:

45770 to 45773—Continued.

"*Vegetable marrows* should be eaten young—say when about one-fourth to one-sixteenth their full size. Cut in this state, and boiled quickly until quite tender in plenty of water, carefully strained, and served with melted butter, they are second to no vegetable that comes to the table, not even excepting green peas or asparagus. Early cutting, careful cooking, and serving are the chief points to which attention should be paid; but there are others, one of the principal being rapid growth. Grow *vegetable marrows* quickly and they are almost sure to be good; grow them slowly and you will find them often tough and bitter. Hence, the soil or place in which they are grown can hardly be too rich for them. Not but what they do fairly well in any good garden soil, but the richer it is the better. On a rubbish heap, for instance, *vegetable marrows* grow with wonderful vigor and fruit abundantly."

45773. *HOLCUS SORGHUM SUDANENSIS* (Piper) Hitchc. Poaceæ.

Sudan grass.

Introduced about 10 years ago, this grass has become very popular as a forage crop. It is easily cured, easily handled as hay, and very drought resistant. It is much superior to ordinary sorghum in the above qualities, and in yield, drought resistance, and palatability it appears distinctly to outclass Johnson grass. It does best in the South, but has been grown in some of the Northern States. Sudan grass is probably best adapted to the drier portions of Texas, Oklahoma, and Kansas; and it seems well adapted for growing with cowpeas for hay and silage. (Adapted from the *Yearbook of the United States Department of Agriculture for 1912*, p. 495.)

45774 and 45775. *JUGLANS REGIA* L. Juglandaceæ. Walnut.

From Srinagar, Kashmir, India. Nuts presented by Mr. R. K. Koul, Koul's Gardens. Received January 24, 1918.

45774. "This walnut compares favorably in size with the best varieties cultivated in the United States. Its shell, however, is rather thick and hard. The form of the nut is broadly oblong-oval, the length $1\frac{1}{2}$ inches. Its quality has not been tested, but judging from its external appearance this would appear in most respects to be a good variety." (*Wilson Popenoe*.)

45775. "A slightly smaller nut than the preceding [S. P. I. No. 45774], and differing markedly in shape. It is slender and tapers slightly toward both ends. The outline is almost elliptical. The surface is not so heavily wrinkled as in the above variety and in most of those grown in the United States. The shell appears to be quite hard. The quality of this variety has not been tested." (*Wilson Popenoe*.)

45776 to 45783. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ.

Taro.

From Sienku, Chekiang Province, China. Tubers presented by Mrs. A. O. Loosley. Received January 25, 1918. Quoted notes by Mrs. Loosley, except as otherwise indicated.

"Yü-na. This vegetable, if need should arise, might help out the potato crop, as it comes between the potato and the artichoke. The natives call the

latter 'foreign yü.' I think these are a little more solid than the artichoke. They are like the potato in substance, but more glutinous and quite different in flavor. They are a substantial addition to a meal. The 'sprouts' are separated in the field, excepting in the 'ginger variety,' and it is these sprouts which are planted for the new crop. In suitable soil and conditions the vegetable is prolific. The crop is harvested in the autumn in the district of Taichow Sienku, Chekiang Province, whence these specimens came."

45776. "*Ong-yü*, or red *yü*, is a little red on the point, cooks a trifle glutinous. The natives prefer these, and I have sent more of this kind. It is a local variety."²

45777. "*Ong-hwa-yü*, or red floury *yü*, is very pink and cooks mealy. It is a local variety."

45778. "*Ts'ih yü*; also called *Tsiang-yü* or ginger *yü* because the 'na,' or shoots and head, are more like the ginger root and do not divide easily; this sort is the only one of which I am sending the 'head,' as the Chinese call it. The other specimens all have a head like this, but more clearly separated from the root and easily broken off; whereas this one must be divided by cutting. The natives say this particular one will divide in five pieces for planting. The ginger *yü* cooks mealy."

45779. "*Ts'ing yü*, or blue *yü*, is a little bluish on the point and stalks and has a large leaf. This variety also cooks mealy, but is said to be better to eat after keeping a few months. It keeps well."

45780. "*Ta-yü*, or large *yü*, has a large head and few sprouts; also mealy."

"This taro roughly resembles the Trinidad dasheen in leaf characters, though the petioles have lighter markings, like those of the 'amadumbe' [S. P. I. No. 36057] from Rhodesia. When cooked the corms and cormels (lateral tubers) are slightly yellowish and of smooth texture. Both are rather moist, and yet the corms are somewhat mealy and very pleasing to the taste. They improve in quality after being dug. The corms are elongated and regular in form and weigh about a pound each. The tubers are small, weighing only from 1 to 3 ounces each." (R. A. Young.)

45781. "*Wöng-yü*, or yellow *yü*; point a little yellow; glutinous."

"The leaf stems of the yellow *yü* are blackish maroon. The corm is roundish and when cooked is moist, soft, and light colored with a tinge of violet at top. The cormels are rather small and when cooked are moist and soft. Both corms and cormels lack flavor." (R. A. Young.)

45782. "*U-ken-yü*, or black-stalked *yü*; the stalk is black and more nearly round. This is the earliest variety and is glutinous."

"The corms of this variety are tough when cooked and unfit for table use. The cormels, or tubers, are of fair size but are soft, pasty, and flavorless. The plant is small growing and the leaf stems blackish maroon." (R. A. Young.)

45783. "*Ong-hwa-yü*, or red floury *yü*, is a variety having the same name as S. P. I. No. 45777, but the sprouts come out in a different way."

² Upon being grown, the tubers listed as S. P. I. No. 45777 proved to be a variety of *Colocasia antiquorum* (L.) Schott.

45784. SECALE CEREALE L. Poaceæ.**Rye.**

From Pampas Centrale, Argentina. Presented by Mr. Juan Williamson.
Received January 29, 1918.

"A yellow variety of rye which was found in a neglected field in Argentina among plants of the ordinary green color. The yellow plants were transplanted and fertilized by ordinary green plants. The seed produced from this fertilization, when grown the next year, produced all green plants. The seed of these plants the following year produced both yellow and green plants in the proportion of one yellow to three green ones. It was also found that when yellow plants are fertilized by pollen from yellow plants the offspring are all yellow. It is thought that the yellow color is due to the wider spacing of the chlorophyll plastids." (Williamson.)

45785 to 45788. ZEA MAYS L. Poaceæ.**Corn.**

From Peru. Procured by Mr. William F. Montavon, American commercial attaché, Lima. Received January 29, 1918.

45785. No. 5. *Rosa* (No. 2), Pilcomayo. Rose-colored corn from Pilcomayo.

45786. No. 12. *Amarillo Bajo*, Chupaca. Short yellowish corn from Chupaca.

45787. No. 9. *Anaranjado*, Colca. Orange-colored corn from Colca.

45788. No. 14. *Plomo Oscuro*, Chupaca. Dark lead-colored corn from Chupaca.

45789 to 45791.

From Summer Hill, New South Wales, Australia. Presented by Mr. Hugh Dixon. Received January 29, 1918.

45789. *ELAEOCARPUS CYANEUS* Ait. Elaeocarpaceæ.

"Grows naturally in a sandy peaty soil, although it will stand a stronger one. Should stand 10° F. if not continuous." (Dixon.)

Usually a small glabrous tree, although sometimes attaining a height of 60 feet or more. The elliptic-oblong to oblong-lanceolate leaves are 3 to 4 inches long, acute at the base, coriaceous, and very conspicuously reticulate. The flowers are borne in loose racemes which are shorter than the leaves. The hard globular drupe is usually one seeded and blue in color. Found in Queensland, New South Wales, and Victoria. (Adapted from *Bentham, Flora Australiensis*, vol. 1, p. 281.)

45790 and 45791. *KENNEDYA* spp. Fabaceæ.

"Grow well in my garden in rather stiff soil. Should stand 10° F. if not continuous." (Dixon.)

45790. *KENNEDYA MONOPHYLLA* Vent.

(*Hardenbergia monophylla* Benth.)

"*Kennedya monophylla* is a mass of royal blue when in flower. It is better to cut it half back after flowering or after the seed is ripe. It does well in a sunny hedge, untrimmed in winter." (Dixon.)

An Australian plant with solitary, ovate or lanceolate, coriaceous, strongly reticulate leaflets which are 2 to 4 inches in length. The numerous flowers occur in pairs or rarely three together on pedicels rather longer than the calyx. (Adapted from *Bentham, Flora Australiensis*, vol. 2, p. 246.)

45789 to 45791—Continued.**45791. KENNEDYA NIGRICANS Lindl.**

A large twining vine from Western Australia. The broad, ovate leaflets are 2 to 3 inches long, and very often only one to each leaf. The deep violet-purple flowers are about 1 inch in length and are borne in racemes which are shorter than the leaves. (Adapted from *Bentham, Flora Australiensis*, vol. 2, p. 249.)

45792 to 45797.

From Zacuapam, Mexico. Presented by Dr. C. A. Purpus. Received January 3, 1918.

45792. ACACIA SPHAEROCEPHALA Cham. and Schlecht. Mimosaceæ.

Bull-horn acacia.

"One of a group of acacias remarkable for their large, stipular, inflated spines, which closely resemble the horns of a buffalo. This particular species is a shrub or small tree. The leaves are bipinnate and have remarkable glands on the rachis and leaflets. The flowers are borne in globose heads on long thick peduncles, clustered in the axils of the long forklike spines. The seeds, when ripe, are surrounded by a sweetish yellow or orange-colored pulp which causes the fallen pods to be eagerly sought after by pigs and other animals." (*W. E. Safford.*)

45793. LYCOPERSICON ESCULENTUM Mill. Solanaceæ.

Tomato.

"The common tomato of Mexico." (*Purpus.*)

45794. PHASEOLUS LUNATUS L. Fabaceæ.

Lima bean.

"*Frijol majan.* This bean is adapted to a hot country and should be planted in a rocky or gravelly soil. It is often planted as a filler between banana trees." (*Purpus.*)

45795. VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ. Yard-Long bean.

"*Tripa de Gallina.* An excellent bean for salad or for cooking like string beans. It is adapted to a hot country. These seeds were produced near Misantla, Vera Cruz." (*Purpus.*)

45796. VITIS sp. Vitaceæ.

Grape.

"*Callullos.* A large grape which has the taste of a Catawba and is used for making a fine jelly. It grows in the brushwoods in the low country." (*Purpus.*)

45797. VITIS TILIAEFOLIA Humb. and Bonpl. Vitaceæ.

Grape.

(*V. caribaea* DC.)

"A small-fruited wild grape excellent for jelly. This is essentially a tropical grape." (*Purpus.*)

For previous introduction, see S. P. I. No. 45361.

45798. ANNONA SENEGALENSIS Pers. Annonaceæ.

From Loanda, Angola, Africa. Presented by Mr. Antonio d'Oliveira-M., Inspector of Agriculture. Received February 15, 1918.

"Variety *ambacensis*. The plant from which this seed was obtained, growing at an altitude of 2,500 feet, came into full fruit about the middle of December." (*D'Oliveira-M.*)

Annona senegalensis varies greatly in size, sometimes being a low shrub up to 2 or 3 feet in height and again a tree 20 feet in height. The young branches are rusty or tawny tomentose. The coriaceous leaves have a

rounded apex and broadly rounded base, and the upper surface is glabrescent while the lower is usually pale and more or less pubescent. The solitary flowers are borne on spreading or decurved peduncles, one-third of an inch to $1\frac{1}{2}$ inches long. The edible fruit is erect or pendent, yellow or orange when ripe, and $1\frac{1}{2}$ inches or more in diameter. This plant has been found in Upper Guinea, Lower Guinea, north-central Bornu, Nile Land, and Mozambique District. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 1, p. 16.)

45799. JUGLANS REGIA L. Juglandaceæ.

Walnut.

From India. Nuts presented by Mr. C. C. Calder, Curator of the Herbarium, Royal Botanic Gardens, Sibpur, near Calcutta, who obtained them from Mr. Green, Cinchona Plantation, Munsong. Received January 26, 1918.

"No. 2. The large-leaved, large-seeded walnut. The trees of this kind are more spreading than and not so lofty as those of the common kind. It attains a very large size." (*Green.*)

45800 and 45801. HIBISCUS SABDARIFFA L. Malvaceæ. Roselle.

From Manila, Philippine Islands. Presented by the Bureau of Agriculture. Received January 30, 1918.

45800. Archer. "Plant robust, frequently exceeding 1.60 meters in height, branching freely, all parts of the plant being greenish or whitish; stems nearly smooth; leaf lobes rather narrow; flowers smaller than those of the red types; eye yellowish; pollen pale yellow; stigma green; full-grown calyx greenish white, sparsely covered with short stiff bristles; average length of calyx 45 mm., width 26 mm., including epicalyx 32 mm.

"The *Archer* is very prolific, the fruit is somewhat less acid than that of the red types, and the products made from it are whitish or amber colored. In the West Indies a wine is made from this variety which is said to resemble champagne in taste and appearance.

"Seed of the above-described variety was received from Mr. A. S. Archer, Antigua, British West Indies, by the writer early in 1913, and it was tested at the Lamao Experiment Station the same year. It has been named in honor of Mr. Archer." (*Wester, Philippine Agricultural Review, June, 1914.*)

45801. Rico. "The young plants of the *Rico* retain their unifoliate leaf characters longer than the *Victor*, and the leaves later are mostly tripartite instead of five parted. The stems and calyces are dark red and the leaves dark green with reddish veins. The pollen is golden yellow. The calyx is of about the same length as that of the *Victor* [45 to 50 mm.], but of greater equatorial diameter [28 mm.]; the fleshy spines subtending the calyx lobes are stout and stand at nearly a straight angle from the axis of the fruit; the apex of the calyx lobes is frequently incurved.

"The *Rico* has been named and described from plants grown from seed obtained by the writer in 1911 from Mr. J. E. Higgins, horticulturist of the Hawaii Agricultural Experiment Station, and has probably descended from a variety grown in 1902 in the Agricultural Experiment Station, Mayaguez, Porto Rico, by Mr. O. W. Barrett, now chief of the division of experiment stations of this Bureau." (*Wester, Philippine Agricultural Review, March, 1912.*)

45802. TRITICUM SPELTOIDES (Tausch) Grenier. Poaceae.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received January 30, 1918.

A bushy grass, branching from the base, with slender, erect stems bearing rough narrow leaves and stiff, rather loose, spikes of long-awned flowers. It is a native of western Asia, being found especially in Syria, and is considered one of the species from which the cultivated wheats were derived. (Adapted from *Ascherson and Gracbner, Synopsis der Mitteleuropäischen Flora, vol. 2, p. 711.*)

45803. GLEDITSIA SINENSIS Lam. Cæsalpiniaceae. Honey locust.

From Yihsien, Shantung Province, China. Presented by Rev. R. G. Conradt. Received February 5, 1918.

A tree up to 60 feet in height, with a trunk girth of 3 to 9 feet, found in the dry valleys of western Szechwan at altitudes ranging from 3,000 to 5,000 feet. It grows to a very large size, with a massive bole clean of branches for 9 to 30 feet from the ground and a wide-spreading head of thick branches. The bark is quite smooth and pale gray in color. In degree of spinescence the trees vary considerably, and some are quite thornless. The wood is nearly white and of little value, but the flattened pods are rich in saponin and are valued as a substitute for soap; they are also used in the process of tanning hides. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 91.*)

45804 and 45805.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director of the Botanic Gardens. Received February 6, 1918.

45804. GARCINIA MANGOSTANA L. Clusiaceae.**Mangosteen.**

A medium-sized Malayan tree, with large feathery leaves and globular, purplish brown fruit, about the size of an apple. It is one of the most delicious fruits of the Tropics. The delicate, white, juicy pulp, surrounding and adhering to the seed, is the part eaten. The dense, thick, reddish rind contains tannin and a dye. The tree is a slow grower and does not usually bear until it is 9 or 10 years old. The essential conditions are a hot, moist climate and a deep, rich, well-drained soil. It thrives up to 1,500 feet and is propagated usually by seed, but also by layering. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, p. 164.*)

For previous introduction, see S. P. I. No. 45180.

45805. NEPHELIUM LAPPACEUM L. Sapindaceae.**Rambutan.**

A large, handsome, spreading tree, up to 40 feet in height; common in the low country of Ceylon and the vicinity of Malakka Strait, ascending to 2,000 feet altitude. The terminal clusters of bright crimson fruits, about the size of hen's eggs, are produced on every branch, each fruit being covered with long soft spines. The large seed is surrounded by a layer of white, opaque pulp, which is of a very agreeable acid taste. The tree is readily propagated by grafting or "gootees" (layering). (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, p. 176.*)

45806 to 45808. ZEA MAYS L. Poaceæ.**Corn.**

From Peru. Procured by Mr. William F. Montavon, American commercial attaché, Lima. Received February 7, 1918.

45806. No. 27. *Salmon*, Iscuchaca. Salmon-colored corn.

45807. No. 30. *Amarillo Subido*, Chongos. Yellow gold-tinged corn of the flour type.

45808. No. 31. *Amarillo Melchocha*, Punta. Yellow-paste corn of the flour type.

45809. CORCHORUS CAPSULARIS L. Tiliaceæ.**Jute.**

From Calcutta, India. Obtained by Mr. James A. Smith, American consul general, from Ralli Bros. Received February 11, 1918.

"The leaves of both *Corchorus capsularis* and *C. olitorius* are commonly eaten as a vegetable when the plants are young, and the practice apparently extends to the wild plant both in India and in other parts of southern Asia; also in Egypt and the Levant, where *C. olitorius* is said to be an important potherb." (*Ralli Bros.*)

This species and the closely allied *Corchorus olitorius* are the chief sources of the jute fiber of commerce. *Corchorus capsularis* is annual, attaining a height of 8 to 12 feet, with a long, thin stem branched only at the top. The flowers are small and yellow. The young shoots of some varieties are commonly used as a potherb, especially in Egypt. The fiber is obtained by means of retting in stagnant pools. Retting consists in steeping the stems in water until they soften sufficiently to allow the fibro-vascular bundles to be extracted from the softer material around them. The fiber is extensively used in the manufacture of cordage, coarse cloth, fishing nets, gunny bags, etc. The plant requires a hot, moist climate followed by a dry season. The method of propagation consists either in broadcasting the seed or transplanting into rows the seedlings raised in a nursery. This plant is indigenous to Ceylon, India, and the Malay Peninsula. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 1, p. 841, and *Macmillan, Handbook of Tropical Gardening and Planting*, p. 542.)

45810. SCHOENOCALON OFFICINALE (Schlecht.) A. Gray. Melanthiaceæ.**Sabadilla.**

From Caracas, Venezuela. Presented by Mr. H. Pittier. Received February 11, 1918.

This plant is also known as *Asagraea officinalis* Lindl., *Veratrum officinale* Schlecht., and *Sabadilla officinarum* Brandt. It is a bulbous plant, growing in grassy places on the eastern declivities of the volcanic range of the Cofre de Perote and Orizaba, near Teocelo, Huatusco, and Zacuapam, down to the seashore in Mexico; also in Guatemala. It has been cultivated near Vera Cruz, Alvarado, and Tlacotalpan, on the Gulf of Mexico.

The fruit consists of three follicles about half an inch long, united at the base. These are light brown in color and papery in texture. Each follicle usually contains two narrow, pointed, black seeds. The testa incloses an oily, albuminous interior. The seed is inodorous and has an acid bitter taste.

Sabadilla (*Cebadilla*) is used principally as a source of veratrin, which is a powerful irritant and counterirritant. In Mexico the bulb of the plant is used as an anthelmintic under the name of *cebolleja*, but is said to be very dangerous in its action. (Adapted from *Pharmacographia, A History of Drugs*, *Flückiger and Hanbury*, p. 697.)

45811. AMARANTHUS PANICULATUS L. Amaranthaceæ. Guate.

From Culiacan, Sinaloa, Mexico. Procured by Mr. W. E. Chapman, American consul, Mazatlan, from Mr. Frank G. Leeke. Culiacan. Received February 12, 1918.

"*Guate* is an ancient Aztec foodstuff modernly used (popped) with sugar and milk as a breakfast food; also ground into meal after popping. Possible production, one-half ton per acre. It grows semiwild amid corn, as a secondary crop. The present production is very small, but can be stimulated if a market is opened." (*Leeke.*)

45812 to 45814. SOLANUM MURICATUM Ait. Solanaceæ. Pepino.

From Ecuador. Obtained by the American consul general, Dr. F. W. Goding, Guayaquil. Received February 13, 1918.

"During a recent trip to the interior I saw thousands of the plants growing near Huigra on a farm owned by Mr. Edward Morley.

"There are three varieties of the fruits: The green, the green striped with purple, and the dark purple.

"This fruit forms a part of the diet of the people of the interior, being eaten raw or cooked in various ways; but foreigners prefer them in a salad as the common cucumber is prepared; served in this way they are delicious." (*Goding.*)

45812. *Morado oscuro*, purple pepino.

45813. *Blanco*, white or green pepino.

45814. *Morado claro*, light green striped with purple.

45815. ZEA MAYS L. Poaceæ. Corn.

From Guelph, Canada. Presented by Mr. J. A. Neilson, of the Ontario Agricultural College. Received February 13, 1918.

"Squaw corn, which was grown during the season of 1917, near Pine River, in the Province of Manitoba. Pine River is north of 52° north latitude and is about 228 miles northwest of Winnipeg. The man who grew this corn said that he did not have any difficulty in getting it to grow in this section. The stalks are rather low growing and will produce ears in a comparatively short time.

"This may not be of any particular value to you in the United States, as you now have many excellent varieties, but it may be of interest to you to know that well-ripened corn can be grown even as far north as the above-mentioned place." (*Neilson.*)

45816 and 45817.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received February 15, 1918.

45816. *GARCINIA MANGOSTANA L. Clusiaceæ. Mangosteen.*

For previous introduction and description, see S. P. I. No. 45804.

45817. *LANSIUM DOMESTICUM Jack. Meliaceæ. Langsat.*

"This, like the mangosteen, is a delicious oriental fruit not yet well established in America but esteemed throughout the Malayan region. Judging from our limited experience with it, the langsat is slightly hardier than the mangosteen, and there seems to be no reason why it should not succeed with us. A few plants have been grown in the West

45816 and 45817—Continued.

Indies and other parts of the American Tropics. The tree is rather slender in habit, with a straight trunk and compound leaves composed of three or more pairs of elliptic to obovate leaflets 3 or 4 inches in length. The fruits are produced in small clusters; in general appearance they suggest large loquats, the surface being straw colored and slightly downy. The skin is thick and leathery and does not adhere to the white translucent flesh, which separates into five segments. Each segment normally contains an oval seed, but some of the segments in each fruit are usually seedless. The flavor is highly aromatic, at times slightly pungent. The fruit is commonly eaten while fresh, but it is said also to be utilized in various other ways." (*Wilson Popenoe*.)

45818. CRATAEGUS MEXICANA Moc. and Sesse. Malaceæ.**Hawthorn.**

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received February 15, 1918.

This seed is from a tree which flowered in Egypt. The tree is bushy, 8 to 10 feet in height, with glabrous, olive-colored branches. The leaves are oblong, attenuated at the base, and 2 to 3 inches in length. The abundant flowers are borne in terminal corymbs. The fruit is larger than is usual among the hawthorns. The color when ripe is pale yellow, dotted with brown. It is a native of the table-lands of Mexico and has been found quite hardy in England. (Adapted from *The British Flower Garden*, p. 300.)

45819. ROSA GENTILIANA Lev. and Van. Rosaceæ.**Rose.**

From Kew, England. Presented by the director of the Royal Botanic Gardens. Received February 15, 1918.

A rose which is abundant in the mountainous regions of western Hupeh and eastern Szechwan, where it forms tangled masses 6 meters or more in height. It grows best in rocky situations from river level to 1,400 feet altitude. The numerous large white flowers are very fragrant, and the anthers are golden yellow. This species is easily distinguished by its glabrous, pale-gray shoots and 3 to 5 foliolate leaves, which are shining green above and very pallid beneath. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 312.)

Received as *Rosa cerasocarpa* Rolfe, which is referred to *R. gentiliana* in *Plantae Wilsonianae*.

45820 to 45838.

From Prof. F. C. Reimer, superintendent, Southern Oregon Experiment Station, Talent, Oreg. Received February 15, 1918.

Obtained by Prof. Reimer during his recent trip, in cooperation with the Office of Foreign Seed and Plant Introduction, to find blight-resistant stocks for commercial varieties of pears and for crossing with American varieties, in an effort to produce blight-resistant hybrids. Quoted notes by Prof. Reimer.

45820. CRATAEGUS PINNATIFIDA Bunge. Malaceæ.**Hawthorn.**

"No. 65. From the Chien Shan Mountains, near Lishan, Manchuria. This is the large-fruited hawthorn found wild and widely cultivated in Manchuria, northern China, and eastern Siberia. It has been introduced

45820 to 45838—Continued.

at various times during the past and often described. It should be tested for blight resistance and as a stock for pears."

45821. *PYRUS BETULAEFOLIA* × *PHAEOCARPA*. Malaceæ. Pear.

"No. 61. Seeds obtained from wild trees at Hsia Ying and Panshan, China. This species produces an abundance of small brown fruit about as large as good-sized peas and of very poor flavor. The trees are very vigorous and attain a height of 50 feet and a trunk diameter of 20 to 30 inches. More often, however, it is a tree from 30 to 40 feet high, with a trunk about 1 foot in diameter. It is a widely distributed species, and I found it from extreme northern China to the Yangtze River. This species is certainly a marvel in its ability to adapt itself to all sorts of conditions. It is common on dry hillsides, on the plains, along edges of ponds, and I often saw it growing well in ponds where the water around the tree, for at least a large part of the year, was a foot deep. It is used extensively throughout northern and eastern China as a stock for all their cultivated varieties and seems to be admirably suited for this purpose. What a pity that this species is so susceptible to pear-blight! Where root-blight is not troublesome this should prove a valuable pear stock in this country."

45822. *PYRUS BETULAEFOLIA* Bunge. Malaceæ. Pear.

"No. 66. From Kingmen, Hupeh Province, China. These seeds were collected from typical trees of this species growing near trees of *Pyrus calleryana*. A careful study will be made of the seedling to determine whether or not these two species have hybridized. The trees are very vigorous and often attain very large size in this region."

45823 to 45828. *PYRUS CALLERYANA* Decaisne. Malaceæ. Pear.

45823. "No. 18. Collected at Hadzmura, Ise Province, Japan. Tree 30 feet high with a trunk 12 inches in diameter, growing along the edge of a rice field about a foot above an irrigation ditch. A very vigorous specimen and bearing large quantities of small fruit."

45824. "No. 24. Collected near the village of Kono, Ise Province, Japan. About 50 trees growing on a mountain side. These trees were small, looking more like large bushes than trees, being only 3 to 8 feet high and with trunks from 1 to 5 inches in diameter. They had evidently been cut off for fuel, which accounted for their small size. The trees were loaded with small brown fruits from one-fourth to half an inch in diameter."

45825. "No. 30. Collected 5 miles south of Suigen, Chosen (Korea), in the Kwasan Mountains. These were the largest trees of this species that I saw in Korea, being 15 feet tall and from 5 to 6 inches in diameter. They are of especial interest and value, because central Chosen is the northern limit of this species, and the winters are quite cold; hence, these trees may prove considerably hardier than those from central China and southern Japan; and, if so, can be used as a stock in colder regions in this country."

45826. "No. 31. Collected 2 miles west of Suigen, Chosen. This is the type which has been named *Pyrus faurei* by Schneider. It is very similar to *P. calleryana*, but the trees and leaves are usually much smaller. I regard this as simply a dwarf form of *P. calleryana*, the dwarf habit being due to the fact that this is

45820 to 45838—Continued.

the northern limit of the species and the trees or bushes are usually growing on very poor soil. The northernmost region in which I found this type was from 75 to 100 miles north of Seoul, Chosen."

45827. "No. 64. Collected from typical trees at Kingmen, Hupeh Province, China. The trees are very vigorous and often reach a height of 60 feet and a trunk diameter of 2 feet. *Pyrus betulaefolia* is abundant in the same region and grows under the same conditions."

45828. "No. 103. Obtained in the Chien Kang Mountains, northwest of Ichang, China, at an altitude of 2,900 feet. The tree from which this seed was taken was 30 feet high with a trunk diameter of 18 inches and bore an enormous crop of fruit. The species is very common in the mountains north and south of Ichang."

45829 and 45830. *PYRUS PHAEOCARPA* Rehder. Malaceæ. Pear.

45829. "No. 47. Collected near Tan Che Tse temple, about 30 miles southwest of Peking, China. Tree wild, about 35 feet high, with trunk 1 foot in diameter. The fruit, which is borne in clusters of from one to five, is roundish, of russet color, from one-half to three-fourths of an inch in diameter, two to three celled, and has a deciduous calyx. Near Yangfan I saw trees of this species from 50 to 60 feet high, with trunks $2\frac{1}{2}$ feet in diameter and an enormous spread of branches. Young trees of this species, from earlier introductions, when inoculated with pear-blight have proved quite susceptible to the disease. It should be tested further, to determine its resistance or susceptibility to blight and as a stock for other pears."

45830. "Collected 20 miles west of Peking, China. This form is similar to No. 47 [S. P. I. No. 45829], and the notes under that number will also apply to this."

45831 and 45832. *PYRUS SERRULATA* Rehder. Malaceæ. Pear.

45831. "No. 100. Collected in the Chien Kang Mountains, 15 miles northwest of Ichang, China, at an altitude of 3,700 feet. The tree is of medium size and moderately vigorous. The fruit is round, russet color, from half an inch to an inch in diameter, three or sometimes two celled, and has a deciduous calyx. The leaves are a very rich dark green and remain on the trees very late in the fall. This type should be tested very thoroughly as a stock for cultivated varieties. It has shown a marked degree of resistance to pear-blight in our work at Talent. This type probably has given rise to some of the small cultivated varieties in Central China."

45832. "No. 105. Obtained at an altitude of 3,275 feet in the mountains 15 miles northwest of Ichang, China. It is very similar to No. 100 [S. P. I. No. 45831], except the shape of the fruit, which is obovoid. To be tested for blight resistance and as a stock for other pears."

45833. *PYRUS USSURIENSIS* Maxim. Malaceæ. Pear.

"No. 60. Collected from wild trees at Shinglungshan, China. Trees of this species were formerly very abundant in this region, but as it has been

45820 to 45838—Continued.

opened up for settlement during the past five years and as the soil is well suited to agriculture, most of the trees have been destroyed. However, many trees are still left, especially along the margins of the valley, in the canyons, and along the streams. These trees attain a very large size, often reaching 75 feet in height and $2\frac{1}{2}$ feet in diameter. The fruit is roundish or slightly flattened, from 1 to $1\frac{1}{2}$ inches in diameter, greenish in color, with gritty flesh and sour flavor. Earlier introductions of this species made by Mr. Frank N. Meyer have shown greater resistance to pear-blight than any other species in the experiments at the Oregon station. It appears to be very promising as a stock for cultivated pears in very cold regions in this country, in regions where blight attacks the roots and trunks of the trees, and in breeding hardy and blight-resistant varieties. It has given rise to some of the best cultivated varieties of northern China."

45834. PYRUS sp. Malaceæ.

Pear.

"No. 46. *Pin li*, or *Ping li*. Very similar to small *Suan li* [S. P. I. Nos. 45846 and 45847]. These seeds were obtained from fruit grown near the Chien Shan Mountains, near Lishan, Manchuria. This is a very popular cultivated variety in the Chien Shan region and seems to be well adapted to the conditions there. The fruit is small, varying from $1\frac{1}{4}$ to $1\frac{1}{2}$ inches in diameter, roundish or slightly flattened in shape, and greenish yellow in color, with often a blush on one side. It ripens during September and possesses a very agreeable and refreshing tart flavor. This variety undoubtedly has been derived from *P. ussuriensis*, which it resembles in tree, leaf, and fruit character. While the fruit has the tart flavor of that species, it is of very much better flavor, and the flesh is softer than in the wild forms. The calyx is always persistent, open, and with distinctly spreading lobes. This variety will be thoroughly tested for blight resistance, and if it shows the marked degree of resistance characteristic of *P. ussuriensis* it should prove of great value, especially in breeding work."

45835. PYRUS sp. Malaceæ.

Pear.

"No. 112. *Pin li*. From Mukden, Manchuria. Identical with No. 46 [S. P. I. No. 45834]."

45836. PYRUS sp. Malaceæ.

Pear.

"No. 109. *Shampa li*. A cultivated variety grown in the Chien Shan Mountains, near Lishan, Manchuria. The fruit is small, yellowish when ripe, with a persistent calyx. It probably belongs to *P. ussuriensis* and for this reason should be thoroughly tested as a stock."

45837. PYRUS sp. Malaceæ.

Pear.

"No. 111. *Shampa li*. From Mukden, Manchuria. Identical with No. 109 [S. P. I. No. 45836]."

45838. PYRUS sp. Malaceæ.

Pear.

"No. 110. *Shu li*. Another cultivated variety from Liaoyang, Manchuria. Similar to *Shampa li*. Undoubtedly a cultivated form of *P. ussuriensis*."

45839 to 45850. *PYRUS* spp. Malaceæ.

Pear.

From China. Collected by Prof. F. C. Reimer, superintendent, Southern Oregon Experiment Station, Talent, Oreg. Received February 16, 1918.

Scions of Chinese pears collected by Prof. Reimer during his recent trip, in cooperation with the Office of Foreign Seed and Plant Introduction, to obtain blight-resistant stocks for the commercial varieties of pears and for crossing with American varieties, in an effort to produce blight-resistant hybrids. Quoted notes by Prof. Reimer.

45839. *PYRUS CALLERYANA* Decaisne.

"Scions from Suigen, Chosen (Korea), of the dwarf form that grows in central Chosen. Fruit of no value. May prove valuable as a stock."

45840 to 45844. *PYRUS USSURIENSIS* Maxim.

"Scions of five different trees of the wild *P. ussuriensis* from Shing-lungshan."

45845. *PYRUS* sp.

"*Ya kuang li*. From Maton, China. A large pear, shaped somewhat like a Bartlett, but thicker toward the base end. It is very juicy and of very good flavor, comparing favorably with the better European pears. I regard this as an extremely promising pear. It certainly possesses considerable *Pyrus ussuriensis* blood, and for this reason we anticipate that it will show a marked degree of resistance to pear-blight. If this proves to be the case, this will be one of the most valuable pears ever introduced into America. It should prove to be of the very greatest value for breeding work."

45846 and 45847. *PYRUS* sp.

"*Suan li*. A small roundish or slightly flattened pear, greenish yellow in color, with often a slight blush on one side. It is very juicy and possesses a very agreeable tart flavor. While too small for the general market it should prove valuable for the home orchard, local market, and for breeding work. This variety undoubtedly belongs to *P. ussuriensis*. Hence its great value for breeding work."

45846. "*Suan li* from Lohualing Pass, China."

45847. "*Suan li* from Matow, China."

45848. *PYRUS* sp.

"*Pai li*. From Chenganssz, near Peking. A medium-sized pear of lemon-yellow color, with soft, juicy, sweet flesh of excellent flavor. This is regarded as one of the very best Chinese pears by both the Chinese and foreigners. It is an excellent keeper and can be obtained on the Peking market from October until March. This variety also shows some of the characteristics of *P. ussuriensis*, and I believe that that species was one of its parents.

"These three varieties [S. P. I. Nos. 45846 to 45848] are far superior to any of the other numerous oriental pears, at least as judged by the tastes of Americans. They are the first and only oriental varieties that I have ever seen or eaten which I could pronounce as really good in quality. These varieties constitute by far the best material that I have ever seen for breeding hardy pears for the cold Plains region."

45849. *PYRUS* sp.

"*Huang hsau li*. From Chenganssz, near Peking. A medium-sized roundish pear, yellowish with a bright-red cheek; flesh firm but of very poor quality."

45839 to 45850—Continued.**45850. PYRUS sp.**

"*Pan chin tse*. From Chenganssz, near Peking. A very large greenish pear with a persistent calyx. Flavor tart; quality not high. May be of value in breeding work."

45851. TRICHOSCYPHA sp. Anacardiaceæ.

From Lambarene, Gabon, Africa. Presented by Rev. Edward A. Ford. Received February 16, 1918.

"I am sending you some seeds of a native fruit called *mvut*, of which there are two principal varieties, with the sarcocarp red and white, respectively; the former I think is the more common, the latter is larger and less pungent; it is the latter variety which I send." (Ford.)

45852 to 45856. ZEA MAYS L. Poaceæ.**Corn.**

From Peru. Procured by Mr. William F. Montavon, American commercial attaché, Lima. Received February 18, 1918.

Samples of flour corn introduced for experimental and breeding purposes of the Office of Corn Investigations.

45852. No. 18. *Pasas, Locroja*. A type with irregular, elongated kernels of a brownish yellow color.

45853. No. 19. *Chancaca, Pucara*. A type with kernels of a brownish yellow color.

45854. No. 7. *Matiz Blanco Colorado, Pariahuanco*. A type with reddish kernels.

45855. No. 29. *Colorado Claro, Nahuinpuquio*. A type with reddish kernels.

45856. No. 26. *Canela, Puncha*. A type of a light brownish yellow color.

45857. CHENOPODIUM AMBROSIoidES L. Chenopodiaceæ.

From Santos, Brazil. Presented by Mr. Carl F. Deichman, American consul. Received February 19, 1918.

Herva de Santa Maria. A native of Mexico, but now naturalized in Brazil. In the southern provinces of Brazil it is known by the above name, but in the northern provinces as *matruz*, *mentruz*, and *mastruco*. In Lisbon and the Azores it is called *hera tormiguera*.

The plant is an annual, but has an almost woody stem, 1 to 2 meters in height, with alternate lanceolate leaves. The inflorescence consists of simple leafy spikes of very small greenish flowers. The seeds are very small and of a black color. The whole plant has a powerful aromatic odor. An infusion of this plant has been used with good results in Europe as a cure for nervous affections. (Adapted from *The Pharmaceutical Journal and Transactions*, p. 713.)

45858 to 45866. CASTANEA spp. Fagaceæ.**Chestnut.**

From Bell, Md. Cuttings presented by Dr. W. Van Fleet, of the Bureau of Plant Industry. Received February 23, 1918. Quoted notes by Dr. Van Fleet.

45858 to 45861. *CASTANEA CRENATA* Sieb. and Zucc.

45858. "Bell No. 1. Fourth generation by straight selection. Started by a variety cross between two early, prolific types of *C. crenata*.

45858 to 45866—Continued.

Very large nut, with good cooking qualities, but poor eating qualities when raw. The tree has a good habit, with thin, handsome branches. The trunk is clean and bright. Leaves very narrow."

See S. P. I. No. 45334 for previous introduction.

45859. "Bell No. 2. Fourth generation by selection. It is a prolific bearer. The fruit is very large and good for cooking, but not good for eating when raw. It is more bitter than Bell No. 1."

See S. P. I. No. 45335 for previous introduction.

45860. "Bell No. 3. Fourth generation. Much like Bell No. 2. Worth consideration for dissemination."

See S. P. I. No. 45336 for previous introduction.

45861. "Bell No. 4. Fourth generation by selection. The trees have very much the same habit as the previous numbers, and the nuts are about the same size. The nuts have good eating qualities and are better than the above numbers."

See S. P. I. No. 45337 for previous introduction.

45862. CASTANEA MOLLISSIMA Blume.

This is the common chestnut of China; it is distributed from the neighborhood of Peking in the northeast to the extreme limits of Szechwan and Yunnan in the west and southwest. Near villages and towns, where the wood is continually cut down to furnish fuel, this chestnut is met with as a bush or low shrub; but in thinly populated areas it is a tree from 15 to 20 meters tall, with a trunk from $\frac{1}{2}$ to 2 meters in girth. The Chinese name is *Pan li*, and the nuts are a valued article of food. (Adapted from *Sargent, Plantae Wilsonianae*, p. 194.)

See S. P. I. No. 45338 for previous introduction.

45863 to 45866. CASTANEA PUMILA × CRENATA. Hybrid chestnut.

45863. "Bell No. 5. A very attractive nut of fair quality, which looks as though it would be a good commercial nut."

See S. P. I. No. 45340 for previous introduction.

45864. "Bell No. 6. Second (F_2) generation from self or chance fertilized seeds; Arlington, Va., 1916."

45865. "Bell No. 7. Second (F_2) generation from self or chance fertilized seeds; Arlington, Va., 1916."

45866. "Bell No. 8. Second generation. A very prolific tree, about 7 feet high, and yielding from 3 to 4 pounds of nuts this season (1916). The nuts are of very good flavor and of good size for a chinquapin, but small for a chestnut."

See S. P. I. No. 45341 for previous introduction.

45867 to 45869.

From Richmond, Australia. Presented by Mr. F. H. Baker. Received February 25, 1918.

45867. ACACIA PYCNANTHA Benth. Mimosaceæ. Golden wattle.

A rapid-growing tree, attaining a height of about 30 feet, the bark of which is used for tanning. The flowers, which are borne in clusters, are yellow; hence the name *golden wattle*. The tree has no soil prefer-

45867 to 45869—Continued.

ence, but is usually found on the poor sandy soil near the sea coast; here it serves also as a sand binder. The wood is tough and close grained, having a specific gravity of 0.83. The bark contains as high as 33.5 per cent of tannin, and the dried leaves have yielded as much as 15.16 per cent of tannic acid. The range is South Australia, Victoria, and southern New South Wales. (Adapted from *Maiden, Useful Native Plants of Australia*, pp. 312 and 365.)

45868. HAKEA ROSTRATA F. Muell. Proteaceæ.

An erect shrub, several feet in height, with glabrous branches. The terete leaves are smooth and rigid. The flowers are borne in sessile axillary clusters. The rugose fruit is 1 to 1½ inches long and three-fourths of an inch broad, recurved at the base, incurved from the middle, with a closely inflexed, conical beak. Found in Victoria and South Australia. (Adapted from *Bentham, Flora Australiensis*, vol. 5, p. 508.)

45869. INDIGOFERA sp. Fabaceæ.

"A beautiful native shrub." (*Baker.*)

45870. ANNONA sp. Annonaceæ.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received February 26, 1918.

A species of *Annona*, originally from Colombia, the seeds of which, according to Mr. Safford, resemble those of *Annona sericea*.

45871 to 45881.

From Japan. Cuttings presented by Prof. T. Onda, Bureau of Horticulture, Imperial Agricultural Experiment Station, Okitsu, Shiznokaken, Japan. Received February 27, 1918. Quoted notes by Prof. Onda.

45871 to 45875. DIOSPYROS KAKI L. f. Diospyraceæ. **Kaki.**

45871. "1. *Gosho*. Medium-sized, rather flattened, yellowish red fruit with a pointed apex. Staminate flowers abundant. Not very fruitful in a wet climate."

45872. "2. *Tenjin-Gosho*. Large, rather square, round-pointed fruit with a beautiful crimson skin. No staminate flowers. Not very productive."

45873. "3. *Oku-Gosho*. (*Oku* means 'late,' but this variety is not so late in ripening.) Large, depressed-globose, crimson fruit, which often splits a little at the apex. Staminate flowers very few, but a very productive variety."

45874. "4. *Hana-Gosho*. Fruit above medium size, broadly ovate with a pointed apex; skin yellowish red. Staminate flowers very few, but fruit plentiful."

45875. "5. *Jiro*. Large, depressed-globose, crimson fruit, with four longitudinal grooves. This variety has no staminate flowers, but is quite productive.

"These varieties of the *Gosho* class usually have no black spots in their flesh; very scarce, if any."

45876 to 45881. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ.

Japanese apricot.

45871 to 45881—Continued.

45876. "1. *Rinshu*. Medium-sized flowers with a light green calyx and white petals; large fruits with thick flesh; not very productive."

45877. "2. *Yoro*. Medium-sized flowers with a reddish brown calyx and light-red petals; bears large fruits with thick flesh and is very productive."

45878. "3. *Bungo*. Large flowers with reddish brown calyx and light-red petals; fruit of medium size with rather thick flesh; not very productive."

45879. "4. *Hana-ka-mi*. (Meaning 'good in flowers, aroma, and fruits.') Medium-sized light-red double flowers, having from 20 to 25 petals; fruits small, with medium-thick flesh; very productive."

45880. "5. *Shiro-Kaga*. Medium-sized flowers with reddish brown calyx and white petals; fruit small with medium-thick flesh; very productive."

45881. "6. *Ko-mume*. Medium-sized flowers with brownish red calyx and white petals; fruits very small, about the size of large peas, but with rather thick flesh; a very productive variety.

"As regards your inquiry about the fertilization of mume trees, we have not noticed any insects, as we have very few at the flowering time of *mume*; but as to what assists their fertilization we have not yet investigated. We do not think *mume* is self-sterile, as it commonly fruits very well, even when it stands singly."

45882 to 45885.

From Natal, Brazil. Presented by Mr. E. C. Green. Received February 27, 1918.

45882 to 45884. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean

Introduced for studies in the oil content of the various varieties of the castor-bean.

45882. A small seed with a light ground color and dark splotches.

45883. A medium-sized seed with a dark ground color and lines and splotches of darker color.

45884. A large seed, nearly white, with a few reddish brown markings.

45885. *STIZOLOBIUM ATERRIMUM* Piper and Tracy. Fabaceæ.

Mauritius bean.

"Enormous quantities of this seed are said to be produced on wild plants growing in the woods in Brazil." (*Green.*)

This is a very widely cultivated species and has been introduced into the United States from Brazil, New South Wales, Australia, Cochin China, Barbados, Mauritius, Java, and Ceylon. In our Southern States this plant grows to a very large size, but is so late that the pods barely mature. The extreme lateness prevents the wide cultivation of this species in the United States.

The vines are very strong and vigorous, with striate softly pubescent stems. The leaflets are very large, with sparsely appressed-pubescent surfaces. The purple flowers are borne in many-flowered, pendent

45882 to 45885—Continued.

racemes, 18 to 30 inches long. The black, sickle-shaped pods are about 4 inches long. The seeds, four or five in number, are oblong, black, and very shiny. (Adapted from *Bureau of Plant Industry Bulletin No. 179, p. 18.*)

45886. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.

From Guatemala. Purchased by Mr. Herbert S. Austin at the request of Mr. Wilson Popenoe, of this office. Received March 2, 1918.

Secured for the purpose of testing the oil content of various varieties.

45887 and 45888.

From the city of Panama, Panama. Presented by Dr. Ramon Arias-Feraud. Received March 5, 1918.

45887. IPOMOEA sp. Convolvulaceæ. Morning-glory.

"Seeds of morning-glories that keep open the whole day." (*Arias-Feraud.*)

**45888. OPERCULINA TUBEROSA (L.) Meisn. Convolvulaceæ.
(*Ipomoea tuberosa* L.)**

A perennial, stout-stemmed herbaceous vine, climbing to the tops of the tallest trees. The leaves are large and compound, with seven oblong leaflets; and three to six yellow flowers are borne on a long peduncle. The fruit is a membranous round capsule, about an inch long, containing two to four large seeds which are covered with short black hairs. It is a native of Brazil. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Francaises, pp. 398 and 567.*)

45889 and 45890. CYDONIA OBLONGA Mill. Malaceæ. Quince.

From Murdock, Kans. Grafts presented by Mr. J. W. Riggs, of the Experiment Grounds. Received March 6, 1918.

Scions from trees of a variety sent to the Office of Foreign Seed and Plant Introduction by Prof. N. E. Hansen, from Samarkand, Russian Turkestan, May 24, 1898, and numbered S. P. I. 1123. Mr. Riggs states that this variety has yielded fine fruit at Murdock, while trees of standard quince varieties have not borne any fruit. The tree is hardy, not being injured in that section of Kansas by drought and heat.

45889. Scions grafted on apple stocks.

45890. Scions grafted on Japanese pear stocks.

45891. RUBUS MACROCARPUS Benth. Rosaceæ. Blackberry.

From Colombia. Presented by Hermano Apolinar-Maria, Instituto de la Salle, Bogota, at the request of Mr. F. M. Chapman, Washington, D. C. Received March 7, 1918.

"In April, 1913, while on a visit to Colombia, I found this variety growing in a little posada called El Peñon in the Temperate Zone at an altitude of 9,600 feet, on the trail from Bogota to Fusagasuga. El Peñon is exceedingly wet, and this giant blackberry may be found only under the conditions which prevail there. It is not the *mora de Castilla*, a cylindrical berry which grows in profusion at 5,000 to 7,500 feet; but this berry is much larger, more nearly round, and shaped more like a strawberry. These berries are often 3 inches in length." (*Chapman.*)

45892 to 45898.

From Auckland, New Zealand. Presented by Mr. H. R. Wright, Avondale.
Received March 7, 1918.

45892. POMADERRIS ELLIPTICA Labill. Rhamnaceæ.

"*Kumarahou*. A rare dwarf shrub belonging to the Auckland Province. This plant is difficult to transplant, but is easily raised from seed. It flowers when 2 years old and if kept well pinched back makes a glorious specimen, being covered in spring with a mass of yellow flowers. It grows on some of our poor clay lands of a close nature, similar to that where the heather grows." (Wright.)

A branching shrub, 4 to 8 feet high, with the young branches, leaves, and flower clusters covered with white or buff-colored stellate hairs. The ovate to oblong leaves are 2 to 3 inches long, and the cymes of yellow flowers, with crisp-margined petals, are clustered into large many-branched panicles. Native name *Kumarahou*, from *kumara* (a tuberlike root) and *hou* (growing deeply or strongly). (Adapted from Cheeseman, *Manual of New Zealand Flora*, p. 99, and from Laing and Blackwell, *Plants of New Zealand*, p. 236.)

45893 and 45894. × VERONICA ANDERSONII Lindl. and Paxt. Scrophulariaceæ.

45893. A hybrid between *Veronica salicifolia* and *V. speciosa*. An ornamental shrub, with drooping, entire, thick, pale-green leaves, somewhat like those of phlox, and brilliant violet-blue flowers, sometimes whitened toward the base of certain racemes. This plant is an interesting combination of grace and majesty, elegance and hardiness. The handsome racemes are dense, erect, slightly nodding at the tip, and somewhat longer than the leaves. (Adapted from *Flore des Serres et des Jardins de Europe*, vol. 7, p. 35.)

45894. Variety *variegata*. A handsome ornamental shrub, with blue-purple flowers in long, slender, semierect racemes. For 30 or 40 years this *Veronica* has been largely propagated and used as a bedding plant for the sake of its clear variegation, the leaves having a broad, creamy white margin. Under this system of treatment the plant seldom or never flowered but produced an abundance of shoots and foliage, which was really what the flower-bedding gardener desired. By cultivating it in a pot, however, until the stems get fairly woody and the pot filled with roots, it flowers beautifully, making a handsome subject for the greenhouse or conservatory in winter. (Adapted from *The Gardening World*, vol. 23, p. 829.)

45895. VERONICA SALICIFOLIA Forst. Scrophulariaceæ. Speedwell.

A very useful, gracefully ornamental species, forming a large bush 5 to 8 feet high, clothed with willow-shaped leaves up to 5 inches in length. During summer it bears profusely slender, pendulous racemes, often 6 inches or more long, of white, pink, or lilac-tinged flowers. (Adapted from *Gardening Illustrated*, vol. 37, p. 308.)

45896 and 45897. VERONICA SPECIOSA R. Cunn. Scrophulariaceæ.

Speedwell.

45896. One of the best of all the veronicas, for it is of vigorous habit, 3 to 5 feet high, forms a wide and shapely bush, and blooms well in autumn and early winter. It bears erect, dense racemes of

45892 to 45898—Continued.

purple or reddish purple flowers, but there are varieties with white, lilac, pink, blue, and red blossoms. As the racemes are some 3 inches long and borne from nearly every leaf axil on the upper parts of the shoots, the effect is very fine. (Adapted from *Gardening Illustrated*, vol. 37, p. 308.)

Received as *Veronica imperialis*, which seems to be a garden name for *V. speciosa*.

45897. Variety *kermisina*. A handsome dark form, the plants blossoming when in a young state, which is not often the case with *Veronica speciosa*. (Adapted from *Loudon, Encyclopedia of Plants*, p. 1546.)

45898. *VERONICA* sp. Scrophulariaceæ.

Speedwell.

Received as *Veronica lobeliaeflora*, for which name a place of publication has not been found.

45899. STIZOLOBIUM PRURITUM OFFICINALE Piper. Fabaceæ.

From Chinandega, Nicaragua. Presented by Mr. C. B. Sibley, Escuela de Agricultura. Received March 8, 1918.

"*Pica-pica*. From what I have observed of this plant it must be very much like the velvet bean of the Florida orchards. I have noticed that it is a very heavy producer of nitrogen nodules. They are very numerous and also quite large. This fact has been taken advantage of by the natives, so that they welcome the plant into the corn fields that lie fallow or resting. One other point in its favor is that the stem of the plant during the growing season does not become hard and woody, so that, used as a green manure, it would soon decay in the soil after being plowed under." (*Sibley*.)

45900. CONDALIA LINEATA A. Gray. Rhamnaceæ. Piquillin.

From Oran, Argentina. Presented by Mr. S. W. Damon. Received March 9, 1918.

"The fruit from which I took these seeds was bought in the market of Jujuy. I have never seen it growing, but as bought it resembles a small-sized inferior grade of cherry." (*Damon*.)

A spiny, much-branched shrub with alternate, spatulate to oblong-ovate, sharply pointed, leathery leaves about half an inch long. The flowers have a 5-parted whitish calyx, but no petals. The oblong, 1-seeded fruits are borne singly or in pairs on short pedicels in the axils of the leaves. (Adapted from *A. Gray, in Botany of the U. S. Exploring Expedition*, vol. 1, p. 275.)

45901. PYRUS COMMUNIS L. Malaceæ. Pear.

From Columbia, Mo. Cuttings presented by Dr. J. C. Whitten, College of Agriculture. Received March 12, 1918.

"The *Surprise* pear forwarded by Dr. Whitten, of the College of Agriculture, Columbia, Mo., is one of the most promising as a blight-resistant pear and may prove of economic importance as a stock for commercial varieties. As grown by Prof. Reimer at Talent, Oreg., it was one of the most vigorous of stocks and seemed to transmit this vegetative character to nearly all varieties of pears which were grafted or budded upon it. Its congeniality, in other words, is to be commended. Dr. Whitten says that the *Surprise* pear is apparently a pure

Pyrus communis. This variety is a large, vigorous grower. It early begins the formation of short, spurlike branches, which spread horizontally, with few of the upright rank shoots customary to Kieffer and other hybrids. The fruit is small, not much larger than Seckel. It is moderately late, ripening only a little ahead of Kieffer, and is of poor quality. The variety bears profusely, however. Dr. Whitten says that he does not remember having seen a trace of blight in any of the *Surprise* trees on his grounds, though they are growing in a pear orchard in which numerous susceptible varieties have died out entirely from blight and other varieties have blighted more or less every year." (B. T. Galloway.)

45902. ARUNDINARIA FALCATA Nees. Poaceæ. **Bamboo.**

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received March 12, 1918.

A slender bamboo growing to a height of 20 feet but not exceeding half an inch in diameter, having the young stems covered with a bluish white waxy coating soon turning yellowish green. The light-green striate-veined leaves are 4 to 6 inches long by one-third of an inch wide, with downy sheaths. The species is not very hardy, being a native of the lower slopes of the Himalayas in northwestern India. (Adapted from Bailey, *Standard Cyclopædia of Horticulture*, vol. 1, p. 448.)

Received as *Arundinaria gracilis*, which is now referred to *A. falcata*.

45903. ZEA MAYS L. Poaceæ. **Corn.**

From Argentina. Purchased from H. H. Marini & Co., Buenos Aires, through the American consul general. Received March 13, 1918.

An amber-colored variety of corn, obtained for experimental tests.

45904. LAGENARIA VULGARIS Seringe. Cucurbitaceæ. **Gourd.**

From Japan. Presented by Dr. L. H. Bailey, Ithaca, N. Y., who obtained them from Gov. H. Hiratsuka, Utsunomya, Japan. Received March 14, 1918.

"The largest gourd utensils I ever saw were at Utsunomya, Japan. I asked for seeds of them and have received a packet from Gov. H. Hiratsuka, of the prefecture. I am sending you some of these seeds, thinking that possibly you would like to have them grown at your Maryland or Florida stations, where the season will probably allow them to mature. Some of the gourds I saw in the market in Japan would hold, I should think, at least a peck." (Bailey.)

45905 to 45912.

From Venezuela and the West Indies. Collected by Mr. H. M. Curran, Laurel, Md., during an exploring trip made by him in 1917. Received March 14, 1918. Quoted notes by Mr. Curran unless otherwise noted.

45905. ACACIA sp. Mimosaceæ.

"From La Vela de Coro, Venezuela. A shrub or small tree, with ornamental red or purple wood."

45906. ACANTHORHIZA ACULEATA (Liebm.) Wendl. Phœnicaceæ. **Palm.**

"From Venezuela."

"A palm with a trunk 6 to 9 feet tall and 4 to 6 inches in diameter, armed with spiniform roots 3 to 4 inches in length. The leaves, forming a dense crown, are fan shaped, green above and silvery below, and about

45905 to 45912—Continued.

3 feet in diameter on petioles 18 inches long. The leaf bases are densely covered with woolly scurf, which splits into many strong fibers; and the branch inflorescence, about 2 feet long, is also densely covered with white woolly scurf. The smooth fruit, three-fourths of an inch long by five-eighths of an inch in diameter, is not edible." (*C. B. Doyle.*)

45907. *ACHRAS ZAPOTA* L. Sapotaceæ.
(*A. sapota* L.)

Sapodilla.

"From Curaçao, Dutch West Indies. A choice variety."

A small, symmetrical tree, 25 to 30 feet high, with leathery, dark-green, shiny leaves and round or oblong fruit which resemble in outward appearance a smooth-skinned brown potato. It is a native of tropical America, although cultivated in the Asiatic Tropics as well. When thoroughly ripe, the fruit is fine for eating, having a very thin skin inclosing a pale-brown, juicy pulp of delicious flavor. It is best propagated by cuttings, although it may be raised from seeds. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 133.)

See S. P. I. No. 44866 for previous introduction.

45908. *ANNONA MURICATA* L. Annonaceæ.

Soursop.

"From Curaçao, Dutch West Indies."

"A small, evergreen, tropical American tree, about the size of a peach tree, with leathery, ill-smelling, glossy leaves; large flowers with fleshy exterior petals; and very large, fleshy, green fruits with white, juicy, pleasantly subacid pulp. It is commonly cultivated in the Tropics of the Old World. A fine drink is made from the juice and excellent jelly and preserves from the pulp. It is easily propagated from seeds or by budding." (*W. E. Safford.*)

See S. P. I. No. 44453 for previous introduction.

45909. *BAUHINIA* sp. Cæsalpiniaceæ.

"From Trinidad, British West Indies. Ornamental."

45910. *CERCIDIUM VIRIDE* (Karst.) Taub. Cæsalpiniaceæ.

"*Indjoe fino* or *Llaro*. From La Vela de Coro, Venezuela. Tree used as an ornamental; golden flowers. Suitable for planting in dry sections of the southern United States."

A thorny shrub or small tree, with compound opposite leaves, each divided into one or two pinnæ, which in turn are divided into five to eight pairs of oblong or somewhat ovate-oblong short-stalked notched leaflets; the orange-yellow flowers grow in short, loosely flowered clusters hidden in a tuft of leaves; the pod is oblong-linear, flatly pressed together, and membranous or somewhat leathery in texture. *Cercidium viride* is found in the hot steppes of Venezuela and New Granada, where the tree is called *quica* by the natives. It is also called *brea* on account of the resinous substance which covers the trunk and branches and which is used as a substitute for pitch. (Adapted from *Karsten, Florae Columbiæ*, vol. 2, p. 25, pl. 113.)

45911. *LAGERSTROEMIA SPECIOSA* (Muenchh.) Pers. Lythraceæ.
(*L. flos-reginae* Retz.)

"From Trinidad, British West Indies. Ornamental."

A magnificent flowering plant which in the Tropics affords one of the most brilliant floral displays imaginable and which is made much use of

45905 to 45912—Continued.

in the gardens of Indian potentates and other places in the East. The flowers appear on axillary peduncles, usually forming panicles at the tips of the branches. The leaves are opposite and entire, oblong, glabrous, and dark green. The flowers are a beautiful shade of rose in the morning, deepening during the day until they become purple in the evening. It is a plant of large growth and is found from Malay to China. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 15, p. 77.)

45912. *TOLUIFERA* sp. Fabaceæ.

"An ornamental leguminous tree from Trinidad, British West Indies."

45913. ZEA MAYS L. Poaceæ.**Corn.**

From Peru. Procured by Mr. William F. Montavon, United States commercial attaché at Lima. Received March 15, 1918.

"No. 15. *Ojos de Lechuga*, Matibamba." (*Montavon*.)

A peculiarly marked variety, having a dull-yellow ground color overlaid with brown lines so as to resemble the grain on a panel of wood. Introduced for the experimental and breeding work of the Office of Corn Investigations.

45914. PINUS ARMANDI Franch. Pinaceæ.**Pine.**

From Formosa. Presented by Mr. G. Takata, director, Department of Productive Industries, Taihoku. Received March 16, 1918.

"A pine producing very large cones full of large, edible seeds which are eagerly collected by the priests in the temples: the cones supply an excellent fuel." (*F. N. Meyer*.)

For previous introduction, see S. P. I. No. 38468.

45915 to 45918.

From Panama. Presented by Sr. Ramon Arias-Feraud. Received March 16, 1918. Quoted notes by Sr. Arias-Feraud. Descriptions adapted from Cook and Collins, *Economic Plants of Porto Rico*.

"I am sending you a package containing seeds from different plants grown on my own plantation."

45915. *ANACARDIUM OCCIDENTALE* L. Anacardiaceæ.

Cashew.

"Red cashew. Trees about 20 feet high, bearing fruits the third year."

A handsome quick-growing tree reaching a height of 40 feet, with large, entire, oval leaves; the wood is close grained, strong, and durable and is used for boat building. The cashew, like the poison ivy, possesses an acrid substance which is strongly irritant to the epidermis and the mucous membranes of human beings. The poisonous material, however, is not spread throughout the plant, but is mostly concentrated in the rather soft shell of the nut, which is borne upon a pear-shaped red or yellow fleshy receptacle 2 to 4 inches long. This receptacle is edible and quite harmless when ripe, having a very agreeable subacid taste in the raw state. It is also very good when cooked. The nut is kidney shaped or distinctly curved near the middle and contains a single large kernel of quite firm flesh, of fine texture and of delicate, very pleasant nutty flavor. No attempt should be made, however, to eat it in the raw state, on account of the poisonous juice of the shell, which must be driven off by the heat, so that roasting is an absolute necessity.

45915 to 45918—Continued.**45916. ARTOCARPUS COMMUNIS** Forst. Moraceæ.**Breadfruit.**

"Chestnut breadfruit. The large fruit contains about 40 chestnuts which are fine to eat after being boiled in salted water."

45917. BLIGHIA SAPIDA Koen. Sapindaceæ.**Akee.**

"Akee fruit from India. Should not be used until the fruit opens, showing the seeds and the yellow edible portion. It is dangerous to eat the closed fruit, as it contains a poison which produces uncontrollable vomiting."

Valued in Jamaica as a highly flavored, wholesome food, the bright yellow, fleshy arillus being the part eaten. The arillus is prepared in various ways, often stewed in milk, and afterwards browned in a frying pan with butter. It is also boiled and mixed with salt fish, onions, and tomatoes as a breakfast food.

45918. CHRYSOPHYLLUM CAINITO L. Sapotaceæ.**Caimito.**

"Silk star-apple. Green color."

A tree up to 45 feet in height and a foot in diameter, bearing an edible fruit about the size of an apple. The wood is dark violet in color and is rather coarse, but is suitable for shingles and bowls and for general carpenter work.

45919. RUBUS sp. Rosaceæ.**Blackberry.**

From Colombia. Presented by Hermano Apolinar-Maria, Instituto de la Salle, Bogota, at the request of Mr. F. M. Chapman. Received March 19, 1918.

45920 and 45921. SYRINGA spp. Oleaceæ.**Lilac.**

From Rochester, N. Y. Presented by Mr. John Dunbar, Assistant Superintendent of Parks. Received February 19, 1918.

45920. SYRINGA REFLEXA C. Schneid.

A bush, 6 to 9 feet in height, growing at altitudes of 4,500 to 7,500 feet. The reddish flowers are borne in long pendulous inflorescences which give the species a distinct appearance quite different from that of all other lilacs. Found at Fanghsien, western Hupeh, China. (Adapted from *Sargent, Plantae Wilsonianae*, pt. 1, p. 297.)

45921. SYRINGA TOMENTELLA Bur. and Franch.

A bush, 1½ to 5 meters in height, forming thickets at altitudes of 9,000 to 10,000 feet. The flowers are white to rose-pink in color. Collected in western Szechwan, China. (Adapted from *Sargent, Plantae Wilsonianae*, pt. 1, p. 301.)

45922. JUGLANS REGIA L. Juglandaceæ.**Walnut.**

From New York. Presented by Dr. Robert T. Morris, New York, N. Y. Received March 20, 1918.

Scions from a walnut tree sent to Dr. Morris by the Office of Foreign Seed and Plant Introduction under S. P. I. No. 17946. Mr. Frank N. Meyer, who collected this walnut in China, described it as a genuine paper-shelled walnut which sells for three times as much money as the hard-shelled varieties. The nuts can be shelled like peanuts.

45923. TELFAIRIA PEDATA (J. E. Smith) Hook. Cucurbitaceæ.

From East Africa. Presented by Mr. M. Buysman, Lawang, Java. Received March 20, 1918.

Mr. Charles Telfair, for whom the plant is named, says of it: "It is diœcious. The fruit is 3 feet long, 8 or 10 inches in diameter, and full of seeds as large as chestnuts (264 in one fruit), which are as excellent as almonds and have a very agreeable flavor; when pressed they yield an abundance of oil equal to that of the finest olives. It is a perennial plant and grows at the margins of forests, enveloping the trees with its branches, while its trunk is frequently seen with a circumference of 18 inches." Its name among the Indians of Zanzibar is *koumé*. (Adapted from *Curtis's Botanical Magazine*, pls. 2751 and 2752.)

For an illustration of the so-called "nuts" of this cucurbit, see Plate II.

45924. CERATONIA SILIQUA L. Cæsalpiniaceæ. Carob.

From Valetta, Malta. Scions procured by Mr. Wilbur Keblinger, American consul. Received February 13, 1918.

"The carob tree, or St.-John's-bread, is a handsome, slow-growing, leguminous tree with evergreen, glossy, dark-green pinnate leaves, forming a rounded top and attaining a great size. It grows well in the semiarid hills all around the Mediterranean, preferring limestone soils; it is sensitive to cold and does not succeed north of the orange-growing regions. The staminate and pistillate flowers are borne on different trees, and it is necessary, in order to insure a crop of pods, to have a considerable proportion of staminate trees in the plantation. The large pods, which are chocolate colored when ripe, are usually borne in great quantities and contain an abundance of saccharine matter around the smooth, hard seeds. Italian analyses show the pods to contain more than 40 per cent of sugar and some 8 per cent of protein, more than 75 per cent of the total weight being digestible. Unusually large trees may reach a height of 60 feet, with a crown 75 feet in diameter, and they may produce as high as 3,000 pounds of pods. These pods are a concentrated feed for horses, milk cows, and fattening stock; to a certain extent they replace oats for horse feed. Sirups and various sweetmeats are sometimes prepared from the carob pods; they are relished by most children and are sometimes offered for sale by fruit dealers in America." (*W. T. Swingle*.)

For previous introduction, see S. P. I. No. 3112.

45925. ALECTRYON SUBCINEREUM (A. Gray) Radlk. Sapindaceæ.
(*Nephelium leiocarpum* F. Muell.)

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received March 21, 1918.

A shrub or small tree, native to New South Wales, Australia, which has compound leaves composed of one to three pairs of shining, coarsely serrate, oblong leaflets 2 to 4 inches long and very small flowers in short axillary panicles; the two to three lobed capsules inclose globose seeds with fleshy arils. (Adapted from A. Gray, *U. S. Exploring Expedition*, vol. 15, *Botany*, p. 258; as *Cupania subcinerea*.)

See S. P. I. No. 44520 for previous introduction.

45926. PITHECOLOBIUM BIGEMINUM (L.) Mart. Mimosaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received March 25, 1918.

A medium-sized tree found on the lower slopes of the Himalayas up to an altitude of 3,000 feet and eastward to the Philippines. The bipinnate leaves are divided into two to four pinnæ, each bearing four to six coriaceous leaflets 4 to 6 inches long. The small heads of cream-colored flowers are borne in large axillary and terminal panicles, and the spirally twisted reddish pods are 3 to 6 inches long. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 455.*)

Received as *Inga bigeminum*, which is now referred to *Pithecolobium*.

45927. LATHYRUS SATIVUS L. Fabaceæ. Bitter vetch.

From North Bend, Wash. Presented by Mr. J. E. Erdmand. Received March 25, 1918.

"Wedge peas obtained from local Indians. I have found these peas when dry are excellent for cooking. The foliage is long and grasslike, and the flowers are white. Very hardy and productive." (*Erdmand.*)

45928 and 45929. BOTOR TETRAGONOLOBA (L.) Kuntze. Fabaceæ. (Psophocarpus tetragonolobus DC.) Goa bean.

From the Philippine Islands. Presented by the College of Agriculture, Los Banos. Received March 25, 1918.

"When these square green pods with 'frills' at each corner are 'strung' (just as snap beans are treated) and cooked in the same way, they make an excellent vegetable. At Brooksville, Fla., the season may be too short for their profitable culture, but the plant deserves a wider test in southern Florida. Its flowers are very attractive and would almost pass for sweet peas." (*Fairchild.*)

45928. *Big Calamismus*. 207-F-5.

45929. *Ilocano Pal-lang*. 6337-F.

45930 to 45939. CITRUS spp. Rutaceæ.

From China. Scions collected by Mr. Frank N. Meyer, Agricultural Explorer of the Department of Agriculture. Received February 25, 1918. Quoted notes by Mr. Meyer.

45930. CITRUS NOBILIS Lour. King orange.

"(No. 1287. Changyang, Hupeh, China. December 10, 1917.) *Tsung pi gan* (furrow skin orange.) A mandarin of medium size, with wrinkled skin and of a beautiful deep-orange color; very juicy, of slightly bitterish flavor, and containing few seeds. In general, a good mandarin of the tonic class."

45931. CITRUS ICHANGENSIS Swingle. Ichang lemon.

"(No. 1288. Changyang, Hupeh, China. December 10, 1917.) *Hsiang yuan*. A large variety of Ichang lemon, mostly shipped to Shasi, a run of a few days down the river. The fruits sell wholesale at 1 cent (Mexican) apiece and retail at 2 to 3 cents (Mexican), according to size and supply. The Chinese, with their great dislike to sour fruits, never use these lemons in beverages, but employ them only as room perfumers or carry them about to take an occasional smell at them, especially when passing malodorous places. Locally the rind is candied in a limited way

45930 to 45939—Continued.

and resembles orange peel in flavor and appearance. The fruits ripen during the month of October; since they do not possess long-keeping qualities, they disappear very quickly. In fruit stores in Ichang they all have disappeared during December. The trees grow to medium large size and resemble pummelos in general appearance, though they are less massive in outline and the foliage is of a lighter hue of green. The trees are densely branched and have large spines on the main branches and small ones even on the bearing branchlets. The foliage suffers a good deal from caterpillars, the trunks are attacked by borers, and maggots are occasionally found in the fruit. Foreign residents in and around Ichang make from these lemons a very fine lemonade, which is of a more refreshing quality than the ordinary kind; they are also used in pastry, sauces, and preserves. On the whole it seems that this Ichang lemon is a very desirable home fruit for those sections of the United States that are adapted to its culture, especially the South Atlantic and Gulf States. It may also prove to be hardier than any other citrus fruit of economic importance. Around Ichang trees have withstood temperatures of 19° F."

45932. CITRUS NOBILIS Lour.

King orange.

"(No. 1289. Changyang, Hupeh, China. December 10, 1917.) *Chungan* (spring orange) and *Loba gan* (turnip orange). A large mandarin of a fine light-orange color, with a corrugated skin; it contains few seeds and has a sweet refreshing flavor."

45933. CITRUS NOBILIS DELICIOSA (Ten.) Swingle.

Tangerine.

"(No. 1290. Changyang, Hupeh, China. December 10, 1917.) *Chuan chü tze* (Szechwan orange). A large flat tangerine of bright reddish color, with very loose skin. Very sweet but somewhat flat in taste. It is a poor keeper and shipper, but on account of its attractive appearance is very much in demand. It is supposed to have originated in Szechwan."

45934. CITRUS sp.

"(No. 1291. Changyang, Hupeh, China. December 10, 1917.) *Ba ehr gan* (handle orange). An orange with the color and shape of a lemon, of fresh, sweet taste, and containing many seeds."

45935. CITRUS SINENSIS (L.) Osbeck.

Orange.

"(No. 1292. Changyang, Hupeh, China. December 10, 1917.) *Hsiang gan* (fragrant orange). An orange of medium size, golden-orange color, firm flesh, and fresh, sweet taste, and containing, as a rule, a fair number of small seeds."

45936 and 45937. CITRUS ICHANGENSIS Swingle.

Ichang lemon.

45936. "(No. 1293. Ichang, China. December 20, 1917.) A coarse variety of Ichang lemon, with a thick, dark-yellow skin, and containing very many large seeds. Possibly a hybrid with a pummelo. Obtained from the garden of the British Consulate at Ichang."

45937. "(No. 1294. Ichang, Hupeh, China. December 30, 1917.) An especially fine variety of Ichang lemon, very juicy and having a delightful fragrance. It makes a superior lemonade. The tree is of a somewhat drooping habit, and the foliage is very dense. Obtained from the garden of the British Consulate at Ichang."

45930 to 45939—Continued.**45938. CITRUS NOBILIS** Lour.**King orange.**

"(No. 1295. Ichang, Hupeh, China. December 28, 1917.) *Pao gan* (spongy, inflated, or vesicular orange). A medium large mandarin with a very wrinkled skin of beautiful deep-orange color; very juicy, and of an agreeably bitter flavor; seeds few. A fruit well worth cultivating in the United States as a tonic mandarin. Obtained from the garden of the Church of Scotland Mission."

45939. CITRUS ICHANGENSIS Swingle.**Ichang lemon.**

"(No. 1296. Ichang, China. December 28, 1917.) A large variety of Ichang lemon, said to be a very heavy bearer; fruits medium large. Obtained from the garden of the Church of Scotland Mission."

45940. STIZOLOBIUM NIVEUM (Roxb.) Kuntze. Fabaceæ.**Lyon bean.**

From Rhodesia, Africa. Presented by Mr. J. O. S. Walters, Director of Agriculture, Salisbury. Received March 25, 1918.

"Lyon or Dedman's bean. One of the principal advantages that this variety has over the Florida velvet bean is the absence of the fine prickly hairs on the stem and leaves, which make the curing of the latter plant for hay a difficult operation. It also seems to be more resistant to frost. For these reasons Dedman's bean, or as it is more commonly known here, stingless velvet bean, is gradually replacing the Florida variety." (*Walters.*)

45941 to 45951.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer of the Department of Agriculture. Received February 25, 1918. Quoted notes by Mr. Meyer.

45941. CITRUS AURANTIUM L. Rutaceæ.**Sour orange.**

"(No. 1297. Tsentsze, near Ichang, China. December 22, 1917.) A large orange with the shape and color of a lemon; quite juicy but having a bitter aftertaste. The fruits are said to acquire their best flavor in spring. Possibly a hybrid between an orange and a pummelo. Obtained from the garden of the R. C. Boys' Training School, across the Yangtze River."

45942. SCHIZOPHRAGMA sp. Hydrangeaceæ.

"(No. 1299. Tsungchiatsui, Hupeh, China. Altitude 3,000 feet. December 14, 1917.) An evergreen vine found trailing over rocks and boulders in a semishady place. The foliage is medium small and leathery, like that of a daphne. Apparently quite rare. To be tested under protection from extremes of sun and frost."

45943. ULMUS sp. Ulmaceæ.**Elm.**

"(No. 1300. Totzewan, Hupeh, China. December 12, 1917.) An uncommon elm growing to a large size and found in mountain districts at low altitudes. Young branches often corky, bark of old trunks grayish brown and fissured. Possibly a desirable shade and avenue tree for mild-wintered regions."

45944. PRUNUS GLANDULOSA Thunb. Amygdalaceæ.**Plum.**

"(No. 1301. Ichang, China. December, 1917.) A shrubby flowering plum growing to a height of 3 to 5 feet. It can be trained to one stem,

45941 to 45951—Continued.

but grows naturally into a densely branched bush. It bears masses of double rose-colored flowers in May and is a fine little shrub for borders and near door entrances in those regions where it is perfectly hardy. Obtained from the garden of the Customs Compound."

45945. CITRUS ICHANGENSIS Swingle. Rutaceæ.

Ichang lemon.

"(No. 2455a. Santsako, Hupeh, China. November 24, 1917.) A very spiny wild tree, found in a field on a mountain slope at an altitude of about 4,000 feet above sea level. Height 18 feet; foliage dense, but individual leaves small; winged petioles quite minute. Fruits fairly juicy, the size and shape of tangerines; rind of bright-yellow color and corrugated, but not excessively so; odor very pleasing. Seeds large but not very numerous. In regions where this wild Ichang lemon occurs one also finds coir palm, loquats, bamboos, large-leaved evergreen privets, and *Cunninghamia lanceolata*. Temperatures probably never go lower than 10° F. The local name of this wild lemon was given me as *Chü gan tze*, meaning 'maggot orange,' since maggots are said to be attracted by the very sour juice. No other cultivated citrus fruits occurred near-by, though a few hundred feet lower down several large pummelo trees were seen. The natives have little use for the fruit; they keep a few in the room to perfume the air, and occasionally they use the dried rind in a medicinal tea. In breeding experiments it may be of value, since it seems to be the hardiest of all the true species of citrus (*Poncirus trifoliata* not being a true citrus)."

45946. ACTINIDIA CHINENSIS Planch. Dilleniaceæ.

Yang-tao.

"(No. 2456a. Near Lungtoping, Hupeh, China. November 23, 1917.) A variety of *yang-tao* bearing smooth fruits of various sizes ranging from that of a gooseberry to a good-sized plum. It possesses a good flavor, though setting one's teeth on edge, as does the use of nonselect pineapples and some wild blueberries. This fruit really is of high promise for the United States and especially so for the mild-wintered sections. It should preferably be grown as an arbor vine. In its native habitat one finds it bearing most heavily when climbing over low scrub and rocks on northeast exposures, where the plants are subjected occasionally to strong twisting winds, which seem to check their tendency to excessive vegetative growth. Where this *yang-tao* occurs one also finds around the farmsteads coir palms, loquats, bamboo clumps, tea plants, tung-oil trees, etc. The fruits when properly handled keep fresh for a long time; they ship and keep especially well after having been subjected to a slight frost. As to their uses, they can be eaten out of hand or as a dessert when skinned, sliced, and sprinkled over with sugar; excellent preserves can also be made from them. The Chinese, with their extensive vegetable diet and their abhorrence of sour fruits, do not care for this fruit and let it waste mostly; Caucasians, however, seem universally to enjoy highly this unique berry, which combines the flavor of the gooseberry, strawberry, pineapple, guava, and rhubarb. Possibly in some of the Southern States new industries could be built up by cultivating this fruit for the northern city markets. The meaning of *yang-tao* is 'male peach,' which is as inappropriate as our name *pineapple* is for the ananas."

45947 and 45948. CASTANEA MOLLISSIMA Blume. Fagaceæ. Chestnut.

45947. "(No. 2457a. Ichang, Hupeh, China. December, 1917.) *Ta pan li tze* (large board oak seeds), a classical name for the chest-

45941 to 45951—Continued.

nut. Large Chinese chestnuts from trees cultivated in neighboring mountain districts."

- 45948.** "(No. 2458a. Wantiaoshan, Hupeh, China. November 30, 1917.) *Wa li tze* (bean chestnut). Chestnuts from wild trees occurring at altitudes between 3,000 and 6,000 feet above sea level. There is considerable variation among the trees and bushes from which these seeds were collected, and perhaps there is more than one species among them. If so, there may be the chinquapin, *Castanea seguinii*, which seems to be wholly resistant to the chestnut blight, *Endothia parasitica*. Purchased from a local collector."

- 45949.** *CASTANEA SEGUINII* Dode. Fagaceæ. **Chinquapin.**

"(No. 2459a. Ichang, Hupeh, China. November 16, 1917.) *Moh pan li* (hairy board oak). A shrubby chinquapin, occasionally growing into a tree 25 to 40 feet high; it occurs on mountain slopes here and there in Central China, often in great quantities. Sprouts only 2 feet high often produce seeds. It appears to be totally resistant to the bark fungus, *Endothia parasitica*, and may be of considerable value in breeding experiments such as Dr. Walter Van Fleet has been conducting for several years. This species seems to be more moisture loving than *Castanea mollissima*, but it grows well on the most barren mountain slopes."

For an illustration of a fruiting branch of this shrub, see Plate III.

- 45950.** *EUCOMMIA ULMOIDES* Oliver. Trochodendraceæ.

"(No. 2460a. Suilokua, Hupeh, China. November 13, 1917.) *Tu chung shu* (ease of heart tree) and *Sheh mien shu* (floss silk tree). The so-called Chinese rubber tree, which has proved to be more hardy and more drought resistant in the United States than was at first expected. In China the bark, with its silky threads (when broken), is used as a high-class drug."

- 45951.** *CITRUS ICHANGENSIS* Swingle. Rutaceæ. **Ichang lemon.**

"(No. 2461a. Ichang, Hupeh, China. December, 1917.) Cultivated strains of Ichang lemons. To be sown to obtain bearing trees for all-round purposes. There is considerable variation in the Ichang lemon, and some seedlings might produce remarkably good fruits."

- 45952.** *TAMARIX APHYLLA* (L.) Karst. Tamaricaceæ. **Athel.**
(*T. articulata* Vahl.)

From Tucson, Ariz. Cuttings presented by Prof. J. J. Thornber, University of Arizona. Received March 26, 1918.

"The *athel* or *evergreen tamarisk* of northern Africa. Trees with erect habit and ascending branches. Branchlets numerous, threadlike, drooping, bluish green, and appearing as if jointed or segmented on account of the character of the small leaves. The plants grow readily from cuttings, which may be made at almost any season. Cuttings often develop into trees 6 to 10 feet tall in a year, while trees 4 to 6 years old under favorable conditions attain heights of 40 to 50 feet. Thrives in sandy and calcareous soils and in those with considerable alkali and is very drought and heat resistant. Young trees with well-matured wood were only slightly injured with a temperature of 6° F. Excellent for windbreaks and very popular on account of its rapid growth, symmetrical form, and evergreen foliage." (*J. J. Thornber.*)

"In March, 1917, Prof. J. J. Thornber, a collaborator of the Office of Crop Physiology and Breeding Investigations, sent to Mr. Bruce Drummond, superintendent of the date gardens at Indio and Mecca, Calif., a few unrooted cuttings about 1 foot long and one-fourth to one-half inch in diameter, of *Tamarix articulata*, received in March, 1909, by Prof. Thornber from Dr. L. Trabut, Government botanist of Algiers. These cuttings made phenomenal growth and by the fall of 1918 were attracting attention all over the Coachella Valley, the original cuttings then being, some of them, more than 20 feet high. This species, called athel by the Arabs, is an excellent windbreak provided the lower branches are not cut off. It grows so rapidly that it makes effective windbreaks inside of two years. After a growth of five years the original trees are several of them well over 50 feet high, having a maximum diameter at the ground of 14 to 17 inches. Without question this is one of the most important windbreaks ever found for use in the great irrigated valleys of the Southwest.

"This species, unlike many other species of *Tamarix*, is gray-green in color, evergreen, and pyramidal in shape, making a very handsome ornamental tree, especially when young.

"The athel not only grows very rapidly, but has hard wood which when dry makes excellent fuel. Prof. S. C. Mason reports that in Egypt this wood is prized by the Arabs for construction purposes, as it is not attacked by borers such as so greatly damage acacia and other hardwoods in Egypt. Dr. Trabut informed me in 1899 that it was the largest and most important tree of the Sahara Desert, frequently attaining a circumference of 6 feet and rarely as much as 17 feet.

"To Mr. Bruce Drummond belongs the credit for having discovered the great value of this species for windbreaks and for ornamental plantings in the hot, irrigated valleys of the Southwest. The original plantings of this species at Tucson, Ariz., made much slower growth and had not made obvious the extraordinary value of this species as a windbreak in the date-growing regions of the Southwest. Because of Mr. Drummond's prompt recognition of the value of this species and active dissemination of cuttings, it is estimated that 25,000 trees are now growing in the Coachella Valley alone, all propagated from less than a dozen original cuttings sent to Mr. Drummond by Prof. Thornber in 1917.

"In March, 1899, when I had the good fortune to make the acquaintance of Dr. L. Trabut, the eminent physician, botanist, and agriculturist of Algeria, he called my attention to this important tree and gave me cuttings from the trees growing in the botanical garden at the University of Algiers, together with information which was published in Inventory No. 7, under No. 3343. Unfortunately, the steamship *Strathleven* on which I shipped this material on March 6, 1899, did not proceed directly from Algiers to New York, as the captain expected, but was ordered back to Smyrna and spent nearly three months in making the trip from Algeria to New York. As a result, many of the plants, among them *Tamarix articulata*, died on the way to this country.

"The spectacular character of this extraordinary plant and its rapid utilization in a practical way is a proof of the value of thorough botanical studies such as Prof. Thornber has been making on *Tamarix* for some years past. Doubtless most of the species are of little practical value, but among numerous untested species which Prof. Thornber obtained was the athel, which promises to be worth millions to the farmers of the southwestern United States." (Walter T. Swingle.)

For an illustration showing the use of the athel tree as a windbreak, see Plate IV.



FRUITING BRANCH OF A NEW DISEASE-RESISTANT CHINQUAPIN FROM CHINA.
(*CASTANEA SEGUINII* DODE, S. P. I. No. 45949.)

Three important facts have been established in regard to the chestnut bark disease: First, that all species of *Castanea* are not equally susceptible to the fungus; second, that hybrids between the different species are fertile; and, third, that the factor which produces immunity, whatever that is, appears to be heritable and by breeding and selection can be incorporated with other characters such as size and quality of the nut, size of the tree, etc. This Chinese chinquapin, occurring near Ichang, is a shrubby species, occasionally growing to 40 feet in height. Frank N. Meyer, who discovered the chestnut bark fungus, *Endothia parasitica*, in China, reports this species as apparently totally resistant to the disease. It grows well on barren mountain slopes but appears to be more moisture loving than the chestnut, *Castanea mollissima*. Introduced primarily for breeding purposes. (Photographed by Frank N. Meyer, Tzeweuh-sien, Shensi, China, September 1, 1914; P12248FS.)



A WINDBREAK OF ATHEL PROTECTING A DATE GARDEN AT INDIO, CALIF. (TAMARIX APHYLLA (L.) KARST., S. P. I. NO. 45952.)

The photograph here reproduced was taken only 18 months after the unrooted cuttings were planted. The athel branches widely near the ground and makes an effective windbreak by the middle of the second summer after the cuttings are planted. Its roots deeply, and so does not injure crops grown near by. It is the most promising windbreak yet found for the hot irrigated valleys of the Southwest, and it is, in addition, a very handsome evergreen ornamental, gray-green in color, of upright pyramidal growth. This species was introduced by Prof. J. J. Thornber, Director of the Arizona Agricultural, Experiment Station. The cuttings were sent to him in March, 1909, by Dr. L. Trabel, Government Botanist of Algeria. The great value of this species as a windbreak, especially for date orchards, was discovered by Mr. Bruce Drummond, Superintendent of the Government Date Garden, Indio, Calif. (Photographed by Mr. Peter Bisset, Indio, Calif., October 10, 1919; P25993FS.)

45953. SOLANDRA LONGIFLORA Tussac. Solanaceæ.

From Sydney, New South Wales. Plants presented by Mr. J. H. Maiden, director, Botanic Gardens. Received March 26, 1918.

A West Indian evergreen shrubby vine, with ovate to obovate sharply pointed leaves on purplish petioles and yellow fragrant flowers usually a foot long. If left untrimmed it is a rampant climber, but it can be grown as a dwarf shrub by constant pruning. It is an adaptive plant, as it grows well in the driest and poorest places and does not appear to object to gross feeding. The foliage of this plant produces a valuable drug called *solandrin*, which has the same active principles as atropin derived from the leaves and roots of *Atropa belladonna* L. The best method of propagation is by cuttings, which should be taken from the flowering branches just after the flowering season is over and planted in a well-drained light sandy soil. (Adapted from *The Agricultural Gazette of New South Wales*, vol. 28, p. 670.)

45954. ACACIA CATECHU (L. f.) Willd. Mimosaceæ. Catechu.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received March 26, 1918.

A medium-sized tree, with opposite, recurved spines and bipinnate leaves made up of 10 to 40 pairs of pinnae, each bearing 30 to 50 pairs of linear leaflets about one-fourth of an inch long. The spikes of yellow flowers are solitary or fascicled, and the flat rich brown pods are reticulate veined. A powerful astringent extract prepared from the wood is the catechu of medicine and the cutch of tanning. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 1, p. 189, and *Lyons, Plant Names, Scientific and Popular*, p. 9.)

45955. ANNONA RETICULATA L. Annonaceæ. Custard-apple.

From Colombia. Presented by Mr. W. O. Wolcott, Medellin. Received March 27, 1918.

"The tree grows about 15 feet high, is very thrifty, thriving best in a hot climate from sea level to about 3,000 feet altitude, and apparently wants rich soil and plenty of moisture. The fruit is about the size and shape of a bullock's heart and has a thin, light greenish yellow skin. It is cut open and eaten with a spoon, there being no core, though many seeds. The flavor is very sugary and fine." (*Wolcott*.)

45956 to 45964.

From Peradeniya, Ceylon. Presented by Mr. George F. Mitchell, Washington, D. C., and procured (except No. 45964) at the Botanical Gardens, near Kandy, Ceylon. Received March 18, 1918.

45956. ARECA TRIANDRA Roxb. Phœnicaceæ. Palm.

A medium-sized palm, native to India, reaching a height of 25 feet, usually having several trunks and sending out basal offshoots. The trunks are cylindrical, and each bears a crown of pinnate leaves 4 to 6 feet long. The orange-scarlet fruits are about the size of an olive. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 1, p. 388.)

45957. CALYPTROCALYX SPICATUS (Lam.) Blume. Phœnicaceæ. Palm.

This stately palm, native to Amboina and other islands of the Molucca group, attains a height of 40 feet. The pinnate leaves have valvate leaflets with reflexed margins, and the flowers, arranged on long spike

45956 to 45964—Continued.

like spadices, produce orange-colored 1-seeded fruits. The wood is used for timber, and the seeds serve as a substitute for betel nuts. (Adapted from *Gardeners' Chronicle*, June, 1870, p. 765.)

45958. DYPsis MADAGASCARIENSIS W. Wats. Phœnicaceæ. Palm.

A graceful Madagascar palm, about 15 feet high, with leaves 10 feet long. The pinnate leaves, with 18-inch segments arranged in fascicles of six or eight, seem to be arranged on the stem in threes, giving it a triangular appearance. This arrangement of the leaves and the fascicled arrangement of the leaflets is peculiar to the genus *Dypsis*, not being found in any other pinnate-leaved palms. (Adapted from *Gardeners' Chronicle*, new ser., vol. 24, p. 394.)

45959. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. Oil palm.

The fleshy outer layer and the kernels of the fruit each yield a commercial oil. Palm oil, that from the fleshy outer layer, is used in the manufacture of soap and candles; white or nut oil, that from the kernels, is used for making margarine or artificial butter. Palm oil is an important food product which is utilized in Brazil by all classes of people. (Adapted from note of *Dorsett, Shamel, and Popenoe.*)

For previous introduction, see S. P. I. No. 45766.

45960. LATANIA COMMERSONII Gmel. Phœnicaceæ. Palm.

An unarmed palm from Mauritius, 40 feet high, having leaves with petioles 4 to 6 feet long, the fan-shaped blades being about 5 feet in diameter and divided into lanceolate-acuminate segments 2 feet long by 3 inches wide. It is a particularly striking palm, the long, smooth petioles and the ribs of the fanlike leaves being colored a bright crimson, which is especially brilliant in the young foliage. (Adapted from *Baker, Flora of Mauritius and the Seychelles*, p. 381.)

45961. ONCOSPERMA FASCICULATUM Thwaites. Phœnicaceæ. Palm.

A spiny palm, 40 feet or more in height and 6 inches in diameter. The leaves, 18 feet in length, are made up of lanceolate long-pointed leaflets 18 inches long by 2 inches broad. The paniculately branched spadix, 2 feet long, bears large numbers of black-purple fruits about half an inch in diameter. This palm is a native of the Central Province of Ceylon, where it grows from sea level to an altitude of 5,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 6, p. 415.)

45962. ONCOSPERMA FILAMENTOSUM Blume. Phœnicaceæ. Palm.

A stoloniferous palm with a trunk 30 to 40 feet high, armed with long black spines. The drooping pinnate leaves are 10 to 12 feet long, with narrow acuminate, coriaceous leaflets 2 feet long. The pendulous red-purple fruiting spadix is about 2 feet long and bears small globose fruits one-third of an inch in diameter. This species is found in swamps in the Malay Peninsula and also in Borneo and Cochin China. (Adapted from *Hooker, Flora of British India*, vol. 6, p. 415.)

45963. DENDROCALAMUS GIGANTEUS Munro. Poaceæ. Bamboo.

One of the largest of the bamboos, growing to a height of 100 feet, with a stem diameter of 8 inches, the stem walls being half an inch thick. It is probably indigenous in the hills of Martaban and is cultivated in Burma and also in most tropical countries. The stems are used for posts and rafters and for piping water. (Adapted from *Brandis, Indian Trees*, p. 678.)

45956 to 45964—Continued.

45964. *MAGNOLIA GLOBOSA* Hook. f. and Thoms. Magnoliaceæ.

"From Lloyd Botanical Garden, Darjiling. I obtained seed of *Magnolia globosa*, which is found at 10,000 feet elevation and requires a moist climate." (Mitchell.)

A small tree with brown branches and ovate leaves 9 inches long by 6 inches wide. The globose flower buds, which appear with the young leaves, are about 2 inches in diameter and open into fragrant white flowers 5 inches across. (Adapted from *Hooker, Flora of British India, vol. 1, p. 41.*)

45965. *NEPHROSPERMA VAN-HOUTTEANUM* (Wendl.) Balf. f. **Pheniceæ.**
Palm.

From Ivoloina, Madagascar. Presented by Mr. Eugene Jaeglé, director, Madagascar Agricultural Experiment Station, through Mr. James G. Carter, American consul, Tananarivo. Received March 23, 1918.

A palm about 35 feet tall with a trunk 6 inches in diameter, found in open places and along streams up to an altitude of 1,000 feet in the Seychelles Islands. The leaves, 5 to 7 feet long, are divided into pinnate segments 3 to 4 feet long, broad segments alternating irregularly with narrow ones, the terminal segments being joined together. The orange-red fruits are borne in clusters 3 to 4 feet long. (Adapted from *Baker, Flora of Mauritius and the Seychelles, p. 386.*)

45966 and 45967. *CYMBOPOGON MARTINI* (Roxb.) Stapf. **Poaceæ.**
(*Andropogon martini* Roxb.) **Rusa-oil grass.**

From India. Presented by Mr. R. S. Hole, Forest Botanist, Forest Research Institute and College, Dehra Dun. Received March 28 and 29, 1918.

A stout perennial grass found in northern India. It grows to a height of 6 feet and has long, perfectly smooth leaves of a soft delicate texture and rich green color. The slender panicles, 6 to 12 inches long, turn to a bright reddish brown color in ripening.

The distinction between the two kinds of Rusa oil procured from this grass, viz, *motia* and *sufia*, which the distillers of Khandesh and the neighboring districts recognize, apparently depends on similar conditions, although the accounts concerning them are to some extent conflicting. The authors of the *Pharmacographia Indica* (vol. iii, p. 558) say: "The oil distillers in Khandesh call the grass *motiya* when the inflorescence is young and of a bluish white color; after it has ripened and become red it is called *sufiya*. The oil obtained from it in the first condition has a more delicate odor than that obtained from the ripened grass."

On the other hand, Mr. E. G. Fernandez reports in a letter to Kew: "The *motia* species (or variety) is usually confined to the higher slopes, while the *sufia* grass is more common on the plains and on the plateau land in the hills; but they are not infrequently found growing together. The *sufia* is much more strongly scented, but the odor of *motia* is preferred, and this latter commands double the price of the former." The samples of both forms supplied by Mr. Fernandez do not show any morphological differences, and as to age, some of the *motia* samples are in a more advanced stage than the *sufia*. (Adapted from *Stapf, The Oil Grasses of India and Ceylon, in The Kew Bulletin of Miscellaneous Information, 1906, p. 341.*)

The letter accompanying these seeds stated that both *sufia* and *motia* were being sent but the packets were not labeled.

45968. VITIS VINIFERA L. Vitaceæ. Grape.

From Tokio, Japan. Cuttings purchased from the Tokio Plant, Seed, & Implement Co. Received March 29, 1918.

"*Koshu*. A very sweet variety of grape which seems to be especially suited to the Tokio climate." (F. N. Meyer.)

45969. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ. Pai ts'ai.

From Peking, China. Procured by Dr. Yamei Kin. Received March 2, 1918.
A selection of a northern strain.

45970 and 45971.

From Tolga, Queensland, Australia. Presented by Mr. J. A. Hamilton.
Received March 30, 1918. Quoted notes by Mr. Hamilton.

45970. ARACHIS HYPOGAEA L. Fabaceæ. Peanut.

"Chinese peanuts. They grow quite a large upright leafy top and could be cut with a mowing machine for fodder. The nuts are produced closely clustered around the base of the stem."

45971. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. Sweet potato.

"*General Grant* sweet potato which, to our fancy, is absolutely the best variety for the table. As a rule, the vines do not run very much."

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Issued May, 1922.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM APRIL 1
TO JUNE 30, 1918

(No. 55; Nos. 45972 to 46302.)



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1922.



FOREIGN-PLANT INTRODUCTION MEDAL.

The work of Mr. Frank N. Meyer, Agricultural Explorer of the Office of Foreign Seed and Plant Introduction of the Bureau of Plant Industry for 13 years, is mainly recorded in the pages of these inventories. His descriptions of plant material which he discovered and sent in close with this fifty-fifth number of the inventories, and it seems appropriate to include in it a cut of the medal which his associates had struck and which is presented each year for distinguished service in the field of plant introduction. This has been made possible by means of a bequest which Mr. Meyer left to his associates in this office. The scene on the obverse of the medal is taken from the bas-relief of what is believed to be the earliest monument to plant introduction. It is on the wall of the palace of Queen Hatshepsut of Thebes, built about 1570 B. C., and portrays the queen's gardeners leading a boat with seeds and potted plants of the incense tree, to secure which they made an expedition to the land of Punt. On the reverse side is shown a branch of the white-barked pine (*Pinus bungeana*) and one of the Chinese grafted jujube (*Ziziphus jujuba*), with whose introduction into America Mr. Meyer's name should always be associated. The Chinese inscription is from the poem of Chi K ang, a poet of the Tang Dynasty, 618 A. D., and, freely translated, carries the thought: "In the glorious luxuriance of the hundred plants he takes delight." The first medal was awarded to Mr. Barbour Lathrop, whose personal support of the policy of plant introduction is recorded frequently in the early publications of this office. (126490F.S.)

Issued May, 1922.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF PLANT INDUSTRY.

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1918 (NO. 55; NOS. 45972 TO 46302).

INTRODUCTORY STATEMENT.

It seems appropriate in this inventory in which are described in his own words the last of Mr. Frank N. Meyer's introductions from China, to give a brief statement regarding his agricultural explorations. These inventories have been the chief medium of publicity through which his discoveries have been made known to the horticultural world. All the plants which he found and imported he described, and the descriptions have appeared in the volumes of this serial publication. These descriptions are not long, but in almost every case they characterize very well the plants and point out the particular value which they are likely to have in America. In this respect they are remarkable and deserve the study of agricultural explorers who may come after him.

Mr. Meyer's first expedition to China covered the period from July, 1905, to July, 1908, and included explorations in Manchuria, Chosen (Korea), and the Chinese Provinces of Chihli, Shansi, Shantung, Honan, Hupeh, and Kiangsi. This period is represented by the introductions which will be found scattered between the numbers 16909 and 24596. His second expedition was from August, 1909, to April, 1912, and numbers between 26131 to 34183 give the descriptions of his collections in England, Belgium, France, Germany, Russia, Crimea, Caucasus, Russian Turkestan, Chinese Turkestan, and Siberia. His third expedition was in Siberia and in the Chinese Provinces of Shantung, Shansi, Shensi, Kansu to the borders of Tibet, Honan, Kiangsu, Anhwei, and Chekiang during the period from November, 1912, to December, 1915, and he describes his introductions under numbers to be found between 35253 and 43022. His fourth trip included Japan and the Chinese Provinces of Shantung, Kiangsu, Honan, Hupeh, Hunan, and Anhwei during the period from October, 1916, until his death in June, 1918, and the

descriptions appear between numbers 45022 and 46718. An outline map has been prepared giving Mr. Meyer's routes of travel during the 13 years of his work as an agricultural explorer (figs. 1 and 2). In addition to the living plant material which Mr. Meyer collected, there are to his credit in the collection of this office 1,740 photographs, which constitute a unique set of illustrations of the agriculture of the Chinese, in particular portraying the crop plants upon which this remarkable people has lived for 40 centuries. Those of them which illus-

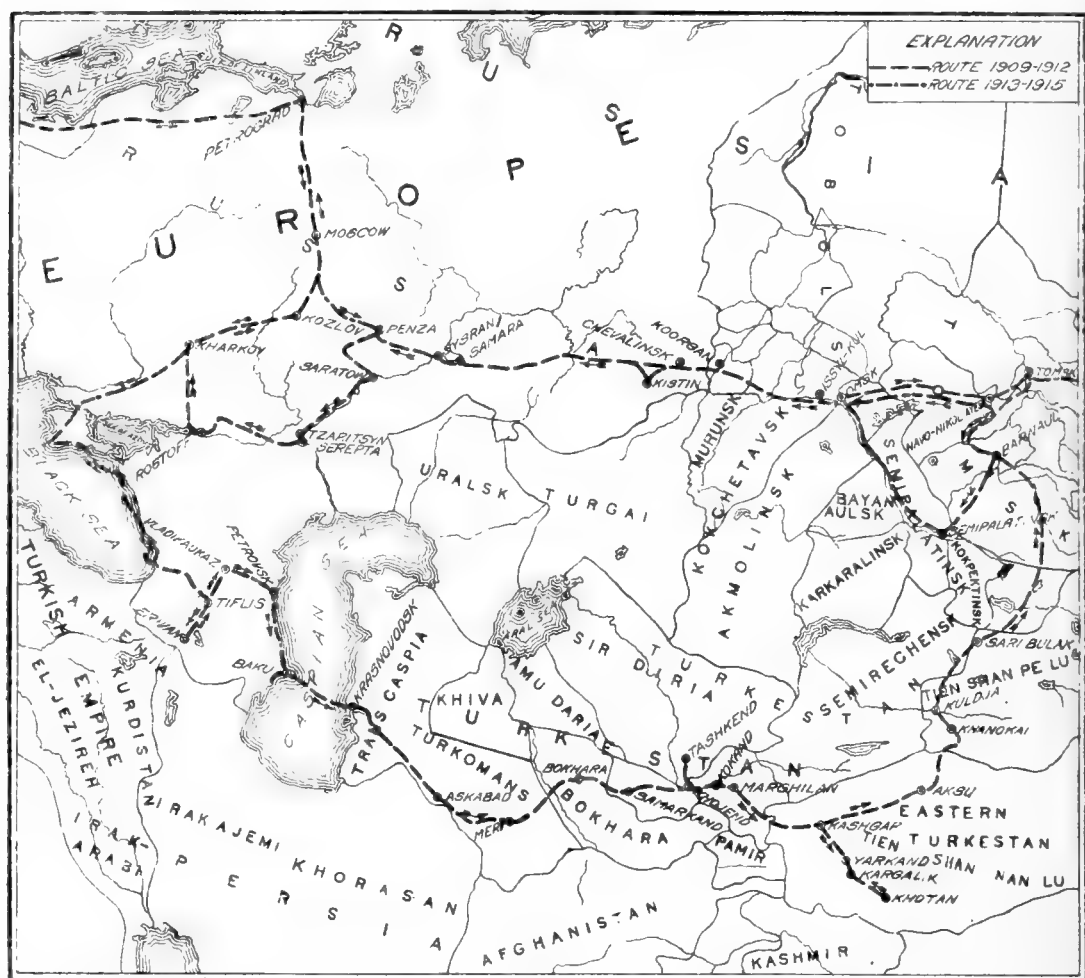


FIG. 1.—Map of Russia and Turkestan, showing the agricultural explorations of Frank N. Meyer. Between 1909 and 1912 Mr. Meyer traveled extensively in these countries hunting for new fruits, forage plants, and other crops for trial in the United States. His second journey to this region, between 1913 and 1915, was less extensive; on this trip only the northern portion of the region above shown was covered.

trate plants destined to become widely used in this country will doubtless come to be published as historic evidences of their first discovery. As accounts of Mr. Meyer's life have been published elsewhere (see *Asia* for January, 1921; *The Journal of Heredity* for June, 1919, and April, 1920; *The National Geographic Magazine* for July, 1919; and *De Aarde en haar Volken*, January to April, and July and August, 1919), and as plants which he introduced will record better than words can his accomplishments, it would hardly

seem appropriate here to more than record the fact that his death occurred on the night of June 2, 1918. He was lost from a river steamer on the Yangtze near the little town of Wuhu. His body was later recovered and buried in the cemetery in Shanghai.

Mr. Meyer left a bequest of \$1,000 to his associates in the Office of Foreign Seed and Plant Introduction, which they have used in the striking of a medal to be known as the Frank N. Meyer Memorial

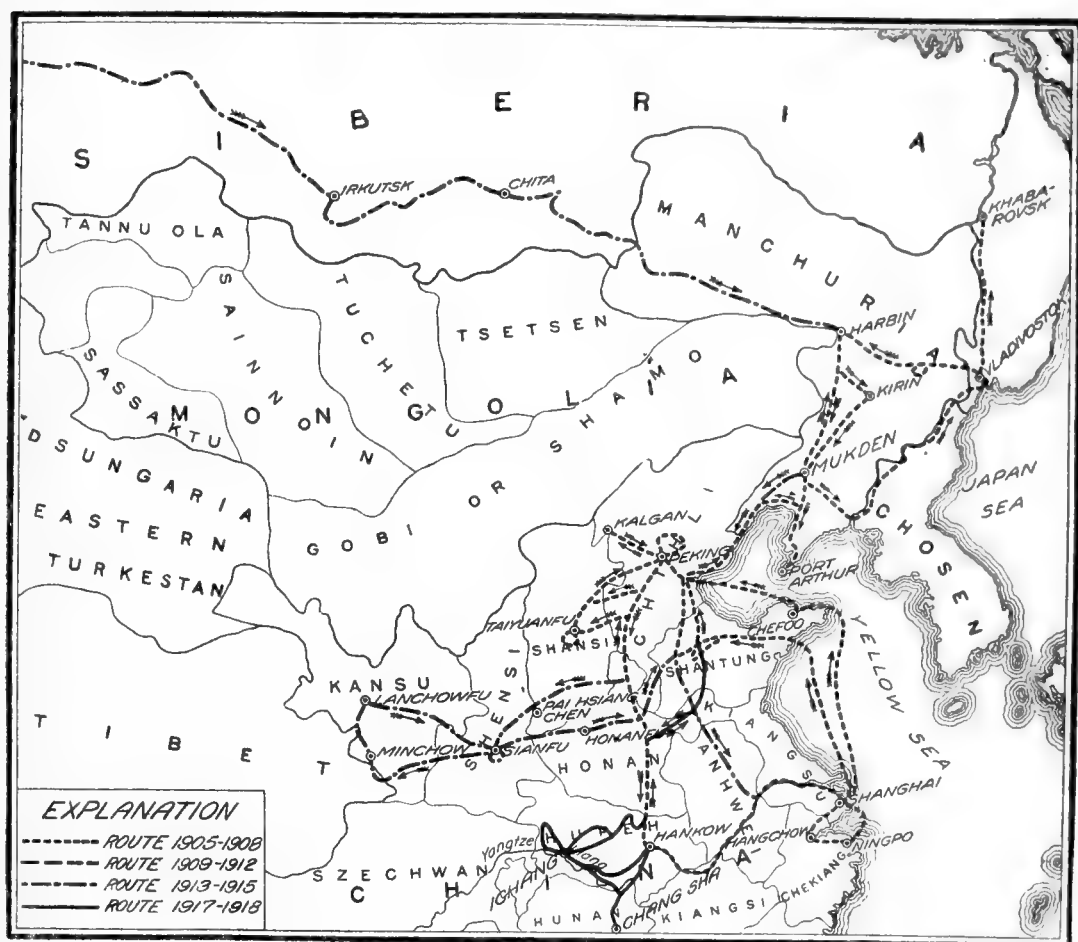


FIG. 2.—Map of eastern Asia, showing the agricultural explorations of Frank N. Meyer. Between the years 1905 and 1919 Mr. Meyer made four trips into eastern Asia in search of new fruits, vegetables, and other economic plants for introduction into the United States. Because of the small size of the map it has been impossible to show each trip entirely and clearly; therefore, after the first trip only such portions of his route are shown as involve territory not traversed previously. This map is shown on a somewhat larger scale than that used for figure 1.

Medal to be awarded under the auspices of the American Genetic Association for distinguished services in the field of foreign-plant introduction (Pl. I). In this way it is hoped to emphasize the importance of this kind of exploration, a work which yields not only ideas but concrete living things that enrich our lives, change our foods, and make more beautiful our surroundings. May it encourage young men with the mental and physical equipment for such work to enter the field and enrich the agriculture of the country by bringing into it the

thousands of new plants which the man of the coming centuries is going to need and use.

A number of valuable plant introductions are described in this inventory. In his remarkable work, "Farmers of Forty Centuries," King calls attention to the fact that the Chinese pay 28 cents a pound for the young shoots of a certain species of clover, or six times as much as they do for any other vegetable. It is not only eaten fresh but dried and used in soups. In view of the value placed upon the fat soluble vitamine which occurs in green leafy vegetables it has seemed worth while to introduce this species (*Astragalus sinicus*, No. 45995) for experimental purposes.

Mr. Barbour Lathrop, during his last trip to Japan, discovered that among the Japanese of all social classes the mitsuba (*Deringa canadensis*, No. 46137) was a common and universally appreciated vegetable. It is a strange circumstance that, although this species is found wild in the woods of the Atlantic coast and as far west as the Mississippi and has for a century or more been cultivated extensively in Japan, no attempt has ever been made to utilize it in America until Mr. Lathrop called attention to it. It is more easily grown than celery, has a characteristic flavor of its own, and would doubtless fit easily into the menu of those who once become familiar with its taste.

In the hammock lands of southern Florida, where every year hundreds of acres are devoted to the raising of early potatoes for the northern market, February frosts or flooding from unusually heavy rains make potatoes a precarious crop. On these lands the tropical yautia grows and produces amazingly, not being affected by flooding and recovering quickly from frost injuries. The tubers when properly prepared form a delicate vegetable, comparing in this respect with the best potatoes. The introduction of a new variety (No. 46030) whose tubers have yellow flesh instead of white and a more mealy character, which make it preferred to all others in Porto Rico, is worthy of special mention. It is known in Guadeloupe as the malanga coloré.

The Australian casaba (No. 46029), which produces fruits the size of a cucumber that are esteemed very highly in Australia for pies and are eaten there fresh with sugar, might be worth testing in our own casaba-melon areas.

The Puget Sound region seems to be one in America where Himalayan plants are most at home, and Dr. Cave's collection of seeds from Darjiling has in it several unusually interesting species. The giant lily (*Lilium giganteum*, No. 46085), which grows to 12 feet in height and bears fragrant yellow-throated blooms; the Nepal lily (*L. nepalense*, No. 46086) with deep maroon-purple, almost

black-throated flowers which, if it were hardier in England, would be, it is reported, the most popular of all the oriental lilies; the large mountain-cherry tree (*Prunus cerasoides*, No. 46093), which makes a brilliant show with its rose-red flowers and may have value because of its acid fruits; the remarkable *P. napaulensis* (No. 46094), a small tree which bears racemes of flowers 10 inches long that produce cherries an inch in diameter and which should appeal strongly to the cherry breeder; an edible *Pyrularia* with fruit 2 inches long (*Pyrularia edulis*, No. 46095); the Javanese sumach (*Rhus javanica*, No. 46096), which colors up beautifully in our autumn and is much hardier than its name would indicate; and a large-fruited *Solanum* (*Solanum khasianum*, No. 46103); these form part of this remarkable collection by Dr. Cave.

Through Dr. Safford's investigations the sacred earflower of the ancient Mexicans (*Cymbopetalum penduliflorum*, No. 46206) has been, so to speak, rediscovered, and it can not fail to be of interest to grow in Florida this remarkable plant, the fragrant flowers of which were dried and used by the ancient Mexicans in flavoring their cocoa and other foods before the advent of cinnamon and the other East Indian spices.

Mr. P. J. S. Cramer has sent in from Buitenzorg a collection of seeds of leguminous plants (Nos. 46243 to 46248) which are grown for forage purposes in Java and can scarcely fail to be of value in southern Florida.

What the behavior in America will be of the Transvaal yellow peach (No. 46239), which Mr. Pole Evans says is peculiarly free from the diseases of that region, remains to be seen, but peach growers can hardly fail to be interested in it.

The possibility that some day the delicious lychee may be commercially grown in Florida is still alluring, though its behavior has not been entirely satisfactory there. Possibly its near relative, *Alectryon subcinereum* (No. 46299), which its sender, Dr. Proschowsky, has fruited at Nice, may be a suitable stock upon which to grow it.

The great interest in the avocado and the occurrence of natural hybrids between the Guatemalan, Mexican, and West Indian forms, which are growing side by side in our Miami garden, have made it seem worth while to gather together all the species of the genus *Persea* for study. *Persea azorica* (No. 45997) from Ponta Delgada is one of these.

That the fruiting and early spring-flowering shrubby cherry (*Prunus glandulosa*, No. 46003) from Ichang may prove its usefulness and finally find a place in the dooryards of the Atlantic coast region, where its flowers and its purple-black cherries will be appreciated, was one of Mr. Meyer's last wishes.

The Feijoa from Paraguay has been a successful introduction and has established itself in thousands of our gardens. Possibly the "Nyandú-aphisá" (*Britoa sellowiana*, No. 46024), a fruiting shrub from the same region, may be equally successful.

The common habit of budding all species of East Indian mangos upon seedlings of the common turpentine mango may prove to be inadvisable. It is possible even that the relatives of the mango, such as *Mangifera longipes* (No. 46022) from Malakka, may have value for stock purposes.

If *Sabinea carinalis* (No. 46026) has not been already tested in California it should be, according to Mr. Jones, of the island of Dominica, for it has showy scarlet flowers and is particularly suited to the dry, hot hillsides which abound in California. How much frost it will stand is yet in question.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels, while the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Miss Esther A. Celander.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., September 17, 1921.

INVENTORY.¹

45972. EDGEWORTHIA CHRYSANTHA Lindl. Thymelaeaceae.

(*E. papyrifera* Zucc.)

From China. Plants presented by Mrs. L. J. Doolittle, Washington, D. C.

Received April 4, 1918.

"*Mitsumata*. From Kiangsi Province, South China. A rare tree with very fragrant yellow flowers appearing in April." (Mrs. Doolittle.)

45973 and 45974.

From Batum, Russia. Presented by the superintendent of the Botanic Gardens. Received April 9, 1918.

45973. BERBERIS JAPONICA BEALEI (Fortune) Skeels. Berberidaceae.

Barberry.

A stiff evergreen shrub native to China, often 10 feet in height, with thick, unbranched stems. The pinnate leaves, 1 to 2 feet long, are made up of 7 to 13 obliquely ovate, dark dull-green leaflets 8 inches long and 6 inches wide, having four to six large spiny teeth along each margin. The delightfully fragrant lemon-yellow flowers are borne in a cluster of several slender erect racemes 6 to 9 inches long and are followed by oblong purple berries half an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 244.)

45974. VIBURNUM DILATATUM Thunb. Caprifoliaceae.

"This is one of the best hardy shrubs for the garden. It grows to only 4 or 5 feet in height and is certain to turn out a full display of bloom every year. The flowers are white, produced in dense corymbs, and are followed by an abundance of bright coral-red berries. The foliage is fine and so far has not been troubled with any insects or fungous enemies." (*The American Florist*, vol. 15, p. 123.)

For an illustration of this shrub in fruit, see Plate II.

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received when introduced by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in this inventory will undoubtedly be changed in many cases by the specialists interested in the various groups of plants, to bring the forms of the names into harmony with recognized American codes of nomenclature.

45975. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. Oil palm.

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Plant Breeding Station. Received April 10, 1918.

"The oil palms I introduced here commenced to fruit when I had not yet my own garden in Sumatra at my disposition. I have planted in several Government rubber estates, where no other oil palms are in the neighborhood, plats of 5 to 10 palms, each plat descending from one seed bearer. I send you with this mail some seeds of *Bundi D*, tree No. 13. You will notice that this variety has a very thin shell, so that you may crack it with the teeth." (*Cramer.*)

45976 to 45979.

From India. Seeds presented by Mr. George F. Mitchell, Washington, D. C., who obtained them from Dr. G. H. Cave, curator, Lloyd Botanic Garden, Darjiling, India. Received April 10, 1918. Quoted notes by Mr. Mitchell.

45976. CORYLUS FEROX Wall. Betulaceæ. Filbert.

"This nut comes from Sikkim and is like a hazelnut. Dr. Cave thinks it will take about 10 years to bear. The natives of Sikkim praise it very highly."

For previous introduction, see S. P. I. No. 41812.

45977. DECAISNEA INSIGNIS (Griffith) Hook. f. and Thoms. Lardizabalaceæ.

"A bush from northern Sikkim that bears wonderful fruit about as big as one's thumb and about 4 inches long. Dr. Cave sent a man to Sikkim specially to procure the seed of this fruit."

This is one of the most remarkable of Indian botanical discoveries, both in structure and appearance, and is further notable as yielding an edible sweet-fleshed fruit. It is a native of the humid forests of Sikkim and Bhutan at altitudes of 7,000 to 9,000 feet above the sea. The trunk or trunks, for sometimes several spring from the ground from a common root, are 6 to 10 feet high, as thick as one's arm, and very brittle; the pale bark is covered with lenticels; the pith is very large; the branches are few, subterminal, and erect; the compound leaves are terminal and axillary; the many-flowered horizontal racemes are a foot long, and the drooping, green flowers are 1 inch long, on slender pedicels as long as themselves. (Adapted from *Curtis's Botanical Magazine*, pl. 6731.)

45978. HOLBOELLIA LATIFOLIA Wall. Lardizabalaceæ.

"Grows in Darjiling, and is a vine bearing a nice fruit, purple in color, the size of a man's thumb, with subacid pulp. The flower is also very showy. The native name of this fruit is *gophila*."

45979. MAGNOLIA CAMPBELLII Hook. f. and Thoms. Magnoliaceæ.

Magnolia.

"Indigenous to the eastern Himalayas, but grows at 8,000 feet altitude. Requires a moist, cool climate."

A deciduous tree, occasionally 150 feet in height, found in the Himalayas in India at altitudes of 8,000 to 10,000 feet. The oval leaves, 6 to 10 inches long, are smooth above and covered beneath with appressed hairs. The fragrant cup-shaped flowers, 6 to 10 inches across and varying in color from rose to deep crimson, are produced in the spring before the leaves. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 67.)



A HANDSOME RED-BERRIED SHRUB FROM EASTERN ASIA. (*VIBURNUM DILATATUM* THUNB., S. P. I. No. 45974.)

A fine *Viburnum* requiring less moisture than most other species and therefore suited for dooryard use. It blooms profusely in June, trusses being produced from short twigs down the side as well as at the top of the branch. The flowers are pure white. The bright-red berries that follow the flowers almost literally cover the bush. Hardy throughout the Eastern States. (Photographed by Peter Bisset, Allegheny, Pa., September 11, 1916; P20597PS.)



A FIELD OF GENGE CLOVER IN EASTERN CHINA. (ASTRAGALUS SINICUS L., S. P. I. No. 45995.)

This clover is extensively grown in China as a manure crop on the low rice fields. The whole crop is plowed under in early summer, immediately before the planting of the rice. It is also used as human food. (Photographed by F. N. Meyer, Mokanshan, Chekiang, China, April 4, 1908; P5437F.S.)

45980 and 45981.

From Adelaide, South Australia. Presented by Mr. J. F. Bailey, director, Botanic Garden. Received April 1, 1918.

"These seeds were obtained from the Macdonnell Range through Dr. E. Angus Johnson, of this city." (Bailey.)

45980. *LIVISTONA MARIAE* F. Muell. *Pheniceae*.

Palm.

An erect palm with fan-shaped leaves divided into narrow plicate segments. This palm was found in the Glen of Palms in the Macdonnell Range, and seems to be very little known. (Adapted from *Bentham, Flora Australiensis*, vol. 7, p. 146.)

45981. *MACROZAMIA MACDONNELLII* F. Muell. *Cycadaceae*.

An erect palmlike plant with pinnate leaves 2 to 4 feet long having linear segments inserted at a very oblique angle, sometimes almost transverse.

This species is referred to *M. fraseri* Miq. in *Bentham, Flora Australiensis*, vol. 6, p. 253, but at the Adelaide Botanic Garden is considered to be distinct.

45982 to 45987.

From Cartagena, Colombia. Procured by A. J. Lespinasse, American consul. Received April 12, 1918. Quoted notes by Mr. Lespinasse.

45982. *CAJAN INDICUM* Spreng. *Fabaceae*.

Pigeon-pea.

"*Huandul*. Grown in the Departments of Bolivar and Atlantico."

"The pigeon-pea, or guandul, supposed to be a native of India, is cultivated widely for food in the Tropics and Subtropics. It is perennial in frostless regions, but is usually cultivated as an annual. About ten months are required to mature the seed. Frost kills the plants. There are many varieties of pigeon-peas, some suitable for food and some not. Being a legume, the crop is valuable for soil improvement as well as for the seed. The plant develops into a large, semiwoody bush reaching the height of from 5 to 10 feet. When grown for seed, plant two or three seeds in each hill, in 4-foot rows, and 3 feet apart in the row, thinning later to one plant in a hill. Pigeon-peas are resistant to excessive rains in the Tropics, and the seed does not rot when planted, as is the tendency with some other leguminous crops. Although the skin of the pigeon-pea is a little tough, the flavor is good. The peas are cooked like ordinary shelled beans, that is, soaked over night and then parboiled 10 to 15 minutes with a little soda in the water; boiling for one hour or a little more after this usually cooks them completely." (R. A. Young.)

For previous introduction, see S. P. I. No. 43646.

45983 and 45984. *PHASEOLUS LUNATUS* L. *Fabaceae*.

Lima bean.

45983. "*Zaragoza* (white). Grown in the Departments of Bolivar and Atlantico."

45984. "*Zaragoza* (red). Grown in the Departments of Bolivar and Atlantico."

45985. *PHASEOLUS VULGARIS* L. *Fabaceae*.

Common bean.

"White and red beans (large). Grown in the Departments of Tolima and Huila."

45982 to 45987—Continued.**45986.** *PISUM SATIVUM* L. Fabaceæ.**Garden pea.**

"Arbejas. Grown in the Departments of Tolima and Huila."

45987. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ.**Cowpea.**"Frijol Pequeno (*cabeza negra*). Grown in the Departments of Bolivar and Atlantico."**45988.** *JUGLANS* sp. Juglandaceæ.**Walnut.**

From Ecuador. Obtained by Dr. Frederic W. Goding, American consul general at Guayaquil. Received April 12, 1918.

"Nuts from a native walnut of Ecuador. This tree is fairly common in the valleys among the Andes, usually where the cinchona trees are to be found." (Goding.)

45989. *AMYGDALUS PERSICA* L. Amygdalaceæ.**Peach.**(*Prunus persica* Stokes.)

From Spain. Procured by the American consul at Bilbao. Received April 13, 1918.

Peach seeds introduced for breeding experiments being carried on in this Department.

45990. *DIOSCOREA ALATA* L. Dioscoreaceæ.**Yam.**

From Trinidad, British West Indies. Tubers presented by Mr. J. B. Rorer, Board of Agriculture, Port of Spain. Received April 20, 1918.

"A large white yam of good quality. When boiled and mashed it can scarcely be distinguished from good white potatoes similarly prepared. Individual tubers are said often to exceed 20 pounds in weight, where the season is long enough." (R. A. Young.)

45991 to 45994. *DIOSCOREA* spp. Dioscoreaceæ.**Yam.**

From Mayaguez, Porto Rico. Tubers presented by Mr. C. F. Kinman, horticulturist, Porto Rico Agricultural Experiment Station. Received April 25, 1918. Identified by Mr. O. W. Barrett, of this Bureau. Descriptions prepared by Mr. R. A. Young, of this Office.

45991. *DIOSCOREA ESCULENTA* (Lour.) Burkill.**Yam.**

"A rather small, smooth-skinned yam, called in Porto Rico 'potato yam.' Said by Mr. C. F. Kinman to have come from Africa. The tubers, when well grown, average about 12 ounces in weight. The skin somewhat resembles that of the white potato. The flesh is usually white, slightly mealy when cooked and mashed, and is sweet. These qualities appear to be variable, and while the yam is sometimes very good it is occasionally very poor. Of possible value for central and southern Florida."

45992. *DIOSCOREA TRIFIDA* L. f.**Yampi.**

"A root-covered, white, sweetish yampi. Usually of very good quality, though somewhat fibrous. The tubers are said to average about three-quarters of a pound each when well grown. This yampi may prove of value on the peninsula of Florida."

45993. *DIOSCOREA ROTUNDATA* Poir. L.**Yam.**

"Guinea. A popular, white-fleshed yam said to commonly reach a weight of 6 pounds or more in Porto Rico and to be of good quality. It thrives there in heavy clay soil and with a rather small amount of rain."

45991 to 45994—Continued.**45994. DIOSCOREA BULBIFERA L.****Yam.**

"The aerial tubers of this yam are somewhat better for food than the ground tubers, according to Mr. C. F. Kinman. The flesh is yellow and rather strong flavored, often practically inedible. The aerial tubers are very tough skinned and keep for a long time."

45995. ASTRAGALUS SINICUS L. Fabaceæ.**Genge clover.**

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received April 15, 1918.

Late Giant variety. A field crop very extensively grown for human food and partly as a source of soil nitrogen; it is closely allied to our alfalfa. Tender tips of the stems are gathered before the stage of blossoming is reached and served as food after boiling or steaming. It is known among foreigners as 'Chinese clover.' The stems are also cooked and then dried for use when the crop is out of season. Wealthy Chinese families pay an extra high price for the tender shoots when picked very young, sometimes as much as 20 to 28 cents per pound in our currency. (Adapted from *King, Farmers of Forty Centuries*, p. 128.)

For illustrations of a field of this clover and of a single plant, see Plates III and IV.

45996. ZEA MAYS L. Poaceæ.**Corn.**

From Torreon, Coahuila, Mexico. Presented by Mr. Carlos Gonzales. Received April 16, 1918.

"*Mai de tiempo*, or *maiz pepitilla*."

Introduced for the breeding experiments of the Bureau of Plant Industry.

45997. PERSEA AZORICA Seubert. Lauraceæ.

From Ponta Delgada, Azores. Presented by the American consul. Received April 16, 1918.

A medium-sized tree found in the forests of all the islands of the Azores, especially in the island of Pico, at altitudes of 1,000 to 2,500 feet. The leaves are oval, with wedge-shaped bases and hairy margins. The fruits are quite small and egg shaped. (Adapted from *Seubert, Flora Azorica*, p. 29.)

For previous introduction, see S. P. I. No. 43480.

45998. ERYTHRINA ARBORESCENS Roxb. Fabaceæ.**Coral tree.**

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received April 19, 1918.

A low tree found in northern India, from Kumaon to Sikkim and in the Khasi Hills, up to an altitude of 7,000 feet. The light-green pinnate leaves are made up of three leaflets 5 to 7 inches long and nearly as broad. The racemes of vivid scarlet flowers, sometimes 15 inches long, appear during the hot season while the tree is still leafless. The lanceolate, curved, brownish pubescent pods contain 2 to 10 large dull-black seeds. The wood is white, soft, and light and is used for making boxes and toys. (Adapted from *Brandis, Indian Trees*, p. 227.)

45999 to 46001.

From Richmond, Jamaica. Presented by Rev. H. B. Wolcott. Received April 20, 1918. Quoted notes by Mr. Wolcott.

45999 and 46000. *CARICA PAPAYA* L. Papayaceæ.

Papaya.

45999. "Large, oval; good quality."

46000. "Small, round; good quality."

46001. *HIBISCUS SABDARIFFA* L. Malvaceæ.

Roselle.

"The red sorrel with us fruits in November and December and at no other time, no matter when sown. Seeds sown in April and transplanted in June make good-sized shrubs in good soil."

46002 and 46003.

From Ichang, Hupeh, China. Roots and cuttings collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received April 25, 1918. Quoted notes by Mr. Meyer.

46002. *ROSA* sp. Rosaceæ.

Rose.

"(No. 1302. March 4, 1918.) A shrubby rose with small foliage, sending up many stems of bright-green color, which are very spiny. Said to bear single, medium-sized flowers of flesh color. Grows to a height of about 6 feet; thrives well in stiff clay soil, and resists great humidity and high temperatures. Of value possibly in breeding experiments and as a stock for roses in warm climates. Obtained from the garden of the Roman Catholic Convent at Ichang."

46003. *PRUNUS GLANDULOSA* Thunb. Amygdalaceæ.

Cherry.

"(No. 1303. March 4, 1918.) *Gai yuen tao*. A spreading shrub, with many slender twigs, growing to a height of 3 to 5 feet; flowering early in spring, with a multitude of small, rosy white flowers which are followed by an abundance of small fruits of purple-black color and of fresh sour taste. These tiny cherries lend themselves well to be made into excellent preserves and are so utilized by the Roman Catholic missionaries in the southwest part of Hupeh, where this bush cherry is found very frequently in gardens. Since this species of *Prunus* thrives in regions with high summer temperatures and great humidity it probably will succeed in the South Atlantic and Gulf States. By selection and hybridization larger fruited forms should be developed and a new fruiting shrub for the home garden would be the result. Obtained from the garden of the Roman Catholic Convent at Ichang."

46004. *JUGLANS REGIA* L. Juglandaceæ.

Walnut.

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens. Received April 25, 1918.

Kashmir walnuts introduced for breeding experiments being carried on by the Bureau of Plant Industry.

46005. *APHLOIA THEAEFORMIS* (Vahl) Bennett. Flacourtiaceæ.

From Madagascar. Presented by Mr. Eugene Jaeglé, director, Agricultural Experiment Station at Ivoloïna, Tamatave. Received April 25, 1918.

An erect, much-branched shrub native to Madagascar, Mauritius, and the Seychelles Islands. The alternate leaves are deeply pinnatifid on the young shoots, with one to three pairs of obtuse ascending lobes; on the mature



THE GENGE CLOVER GROWN AS A VEGETABLE IN CHINA. (ASTRAGALUS SINICUS L., S. P. I. No. 45995.)

King, in his *Farmers of Forty Centuries*, draws attention to the fact that the Chinese grow this clover not only as a source of soil nitrogen but for human food. For this purpose they cultivate it in specially prepared beds and gather the shoots before the stage of blossoming is reached and prepare them by boiling or steaming them. The stems are also cooked and dried for winter use. When picked very young these clover shoots bring the highest price of any vegetable, as much as 28 cents gold per pound. The reason for this fact is worthy of investigation by physiologists. (Photographed by Frank N. Meyer, Mokanshan, Chekiang, China, April 22, 1908; P5438FS.)



THE CHINESE QUINCE TREE. (*CHAENOMELES SINENSIS* (THOUIN)
KOEHNE, S. P. I. No. 46130.)

A handsome ornamental park tree introduced into Europe from China as early as the eighteenth century, now much grown on the Riviera. The tree shown is in the grounds of the American Embassy in Tokyo. It is a long-lived species of quince bearing fruits sometimes as much as 7 inches in length with a very waxy highly scented skin. Frank N. Meyer, who secured the seeds of S. P. I. No. 46130 in Ichang, China, reported that the fruits are only used by the Chinese there as room perfumers and suggests the tree be tried as a stock for pears in the Southern States. Possibly it may be useful for breeding purposes also. (Photographed by F. N. Meyer, Tokyo, Japan, September 14, 1915; P12355FS.)

branches they are oblong, entire or crenate, 1 to 4 inches long. The yellowish flowers, half an inch broad, are borne singly or in small fascicles in the axils of the leaves. (Adapted from *Baker, Flora of Mauritius and the Seychelles*, p. 12.)

46006. LIVISTONA HOOGENDORPII Andre. Phœnicaceæ. Palm.

From Buitenzorg, Java. Presented by the director of the Botanic Garden.
Received April 12, 1918.

Livistona hoogenдорpii is quite distinct from its allies, *L. chinensis* and *L. rotundifolia*. It is more dwarf in stature, with leafstalks covered with stout brown spines and the leaf blade divided almost from its base. (Adapted from *The Garden*, vol. 25, p. 392.)

46007 to 46018.

From Colombia. Purchased by Mr. Claude E. Guyant, American consul at Barranquilla. Received April 12, 1918.

A collection of various kinds of legumes introduced for experimental purposes. Quoted notes by Mr. Guyant.

46007. CAJAN INDICUM Spreng. Fabaceæ. Pigeon-pea.

"*Guandul*."

For previous introduction, see S. P. I. No. 45982.

46008. CICER ARIETINUM L. Fabaceæ. Chick-pea.

"*Garbanzo* (de Honda), Chick-pea from Honda."

46009. LENTILLA LENS (L.) W. F. Wight. Fabaceæ. Lentil.

(*Lens esculenta* Moench.)

"*Lentejas*. Lentils."

46010 to 46012. PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.

46010. "*Zaragoza* (blanca). White."

46011. "*Zaragoza* (caraotas)."

46012. "*Habas* (blancas). Horse beans, white." [Note.—These were Lima beans, not horse beans, *Vicia faba*.]

46013 to 46016. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

46013. "*Zaragoza* (blanca). White."

46014. "*Frisol* (bolon). Kidney bean, round."

46015. "*Frisol* (rojo). Kidney bean, red."

46016. "*Frisol* (de Santander). Kidney bean from Santander."

46017. VICIA FABA L. Fabaceæ. Broad bean.

"*Habas* (negras). Horse bean, black."

46018. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

"*Frisol* (ojos negros). Kidney bean, black eye."

46019 to 46023.

From Buitenzorg, Java. Presented by the director of the Botanic Garden.
Received April 16, 1918.

46019. DEGUELIA TRIFOLIATA (Lour.) Taub. Fabaceæ.

(*Derris uliginosa* Benth.)

A robust climbing shrub with glabrous branchlets and leaves, found from India to China and throughout the Malayan Archipelago to Aus-

46019 to 46023—Continued.

tralia. The compound leaves are made up of three to five somewhat coriaceous, ovate leaflets 2 to 4 inches long, and the rose-red flowers are produced in branched racemes 4 inches long. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 242.)

46020 and 46021. *LANSIUM DOMESTICUM* Jack. Meliaceæ. **Langsat.**

"The tree is rather slender in habit, with a straight trunk and compound leaves composed of three or more pairs of elliptic to obovate leaflets 3 or 4 inches in length. The fruits, which ripen in the Straits Settlements from July to September, are produced in small clusters; in general appearance they suggest large loquats, the surface being straw colored and slightly downy. The skin is thick and leathery and does not adhere to the white, translucent flesh. The flavor is highly aromatic, at times slightly pungent. Each of the five segments of the flesh normally contains an oval seed, but some of the segments in each fruit are usually seedless. The fruit is commonly eaten fresh, but is also said to be utilized in various other ways." (*Wilson Popenoe*.)

46022. *MANGIFERA LONGIPES* Griffith. Anacardiaceæ.

A large evergreen tree from the Malay Peninsula, related to the mango. The lanceolate, coriaceous leaves are 6 to 10 inches long and 1 to 3 inches wide. The panicles of white flowers with yellow veins are branched and longer than the leaves. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 15.)

46023. *PANGIUM EDULE* Reinw. Flacourtiaceæ.**Pangi.**

A quick-growing, spreading tree with very large heart-shaped leaves, found on the Malay Peninsula. The large rusty-brown woody fruits are the size of small coconuts and contain numerous large seeds. The seeds are said to be poisonous until boiled and macerated in water, when they become edible. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 578.)

46024 and 46025.

From Puerto Bertoni, Paraguay. Presented by Dr. M. S. Bertoni. Received April 17, 1918. Quoted notes by Dr. Bertoni.

46024. *BRITOA SELLOWIANA* Berg. Myrtaceæ.

"*Nyandú-aphisá*. A shrub growing to a height of 2 to 4 meters. The edible fruits are sweet, but slightly acid. The plant has withstood a temperature of -4° C."

46025. *GUAREA GRANDIFOLIA* DC. Meliaceæ.

"A small or medium-sized tree of rapid growth. It is a good shade plant for coffee and is ornamental because of its dense crown of large leaves."

46026. *SABINEA CARINALIS* Griseb. Fabaceæ.

From Dominica, British West Indies. Presented by Mr. Joseph Jones, curator of the Botanic Gardens. Received April 19, 1918.

"This small tree is known locally as *Bois Charibe* and is one of the most showy of our native plants. It is a very fine flowering tree, and I have seen **nothing** in the Tropics to surpass it as a mass of color. If grown on fairly

good land it will not make a good show, but if planted on a dry, rocky hillside, where it will be scorched by the sun for a period of three or four months each year, it makes a marvelous display of flowers. It would probably succeed in the hot parts of California." (*Jones.*)

A shrub or small tree with abruptly pinnate leaves having six to eight pairs of oblong leaflets. The large bright-scarlet flowers are borne in fascicles of three to five and appear before the leaves. (Adapted from *Grisebach, Flora of the British West Indian Islands*, p. 183.)

46027. CHENOPODIUM BONUS-HENRICUS L. Chenopodiaceæ.

Good King Henry.

From Ireland. Presented by the director of the Dublin Royal Botanic Garden. Received April 22, 1918.

An herbaceous perennial, 2 to 3 feet tall, often cultivated for the large triangular leaves, which are used like spinach.

46028. SOLANUM ACULEATISSIMUM Jacq. Solanaceæ.

From San Jose, Costa Rica. Fruits presented by Mr. A. Tonduz, Ministerio de Hacienda y Comercio. Received April 30, 1918.

A spiny undershrub 1 to 2 feet high, widely distributed in the Tropics. The few-flowered axillary cymes of snow-white flowers 1 inch across are followed by globose orange or yellow fruits often 2 inches in diameter. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 6, p. 3184.)

46029. CUCUMIS MELO L. Cucurbitaceæ.

Australian casaba.

From Burringbar, Australia. Presented by Mr. B. Harrison. Received April 30, 1918.

"I am inclosing seeds of the Australian casaba, the correct name of which I do not know, but which I believe originally came from India. It is a most prolific plant, bearing cream-colored fruit about the size of a cucumber. It is sometimes called the 'apple melon' and is quite popular here, being very palatable when eaten with sugar or made up into pies. It is hardy, prolific, and early, and should thrive well throughout the United States." (*Harrison.*)

46030. XANTHOSOMA sp. Araceæ.

Yautia.

From San Juan, Porto Rico. Tubers presented by Mr. W. J. McGee, chief, Bureau of Chemistry, Experiment Station. Received May 2, 1918.

"A small-growing yautia which produces edible, yellow-fleshed corms; they are mealy and dry and rich in flavor when cooked. The cormels or lateral tubers, are usually too small for table use. The very young leaves are often used for greens, called *calalou* in the French West Indies. The leaves are acrid and require parboiling with a little baking soda or cooking with fat meat. The plant seldom exceeds 3 feet in height. The leaf blade is narrowly sagittate, with a broad sinus; basal veins naked for one-fourth of an inch; marginal vein one-eighth of an inch or less from edge of blade. Petiole green; sinus wings glaucous, tinged with purple, with an irregular greenish white stripe next to the margin; margin of wing pink. The prominent whitish stripe on the wing of the petiolar sinus is an easy distinguishing character. In Guadeloupe this yellow variety is called *malanga coloré*, or colored eddo, and is said to be more highly esteemed than the white-fleshed yautias. It is eaten baked, boiled, fried, etc." (*R. A. Young.*)

46031 to 46046.

From Caracas, Venezuela. Presented by Dr. H. Pittier. Received April 23, 1918.

46031 to 46037. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.

"These varieties have not as yet been generally distinguished by the people at large here, so they have no distinctive names." (*Pittier.*)

46031. No. 1. Seed three-fourths of an inch long by half an inch broad; light gray with irregular dark-brown longitudinal markings.

46032. No. 2. Seed three-eighths of an inch long by one-fourth of an inch broad; dark gray with brown markings.

46033. No. 3. Seed half an inch long by one-fourth of an inch broad; dark gray with dark-brown, rather regular markings.

46034. No. 4. Seed three-eighths of an inch long by one-fourth of an inch broad; light gray with few, narrow, irregular, brownish markings.

46035. No. 5. Seed half an inch long by three-eighths of an inch broad; dark gray with numerous irregular dark-brown markings.

46036. No. 6. Seed five-eighths of an inch long by three-eighths of an inch broad; reddish gray with narrow streaks of reddish brown.

46037. No. 7. Seed three-eighths of an inch long by one-fourth of an inch broad; dark gray with nearly black markings.

46038 to 46046. TRITICUM AESTIVUM L. Poaceæ.

Wheat.

(*T. vulgare* Vill.)

"A collection of the native varieties of wheat with their common names. They come from the State of Trujillo in the Venezuelan Andes, where they are extensively cultivated from 1,000 meters upwards." (*Pittier.*)

46038. "Blanco. Cultivo del Distrito Bocono."

46039. "Cariaco. Cultivo del Distrito Bocono."

46040. "Cariaco. Distrito Urdaneta."

46041. "Macarrón. Cultivo del Distrito Bocono."

46042. "Nortero. Cultivo del Distrito Bocono."

46043. "Pelón. Distrito Urdaneta."

46044. "Raspudo or Caña morada. Distrito Urdaneta."

46045. "Salmerón. Cultivo del Distrito Bocono."

46046. "Salmerón. Cultivado en la 'Cristalina,' Distrito Trujillo."

46047 and 46048.

From San Lorenzo, Tolima, Colombia. Presented by Mr. M. T. Dawe, Estacion Agronomica Tropical. Received May 1, 1918.

46047. ATTALEA sp. Phœnicaceæ.

Coquito palm.

Introduced for tests of oil-producing seeds of various kinds.

46048. ELAEIS MELANOCOCCA Gaertn. Phœnicaceæ.

Noli palm.

"A palm with practically no stem, the leaves, 8 to 10 feet long, being borne within 2 to 3 feet of the ground. The fruits, which are compressed, irregular, and orange-red in color when ripe, are borne in dense clusters. Two classes of oil are obtained—red oil from the coating of the seeds and a clear oil from the kernels. The latter is very much prized as a cooking oil. The palm is common in the low lands among flooded areas under conditions similar to those of our flooded bottom lands along the Mississippi and other Gulf coast rivers." (*H. M. Curran.*)

For previous introduction, see S. P. I. No. 43001.

46049. ACACIA MELLIFERA (Vahl) Benth. Mimosaceæ.

From Cairo, Egypt. Presented by Mr. T. W. Brown, director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received May 4, 1918.

A shrub or small tree. native to the Niger and Upper Nile valleys and said to yield a gum like gum arabic. The smooth leaves, as broad as long, not exceeding 1 to 2 inches, are made up of two pairs of pinnae, each having a pair of obliquely obovate-oblong entire leaflets. The fascicled spikes of yellow flowers are longer than the leaves and produce pale sinuous pods 1 to 2 inches long. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 2, p. 340.)

46050. CAJAN INDICUM Spreng. Fabaceæ. Pigeon-pea.

From New York, N. Y. Purchased from S. Rosen. Received May 11 and 17, 1918.

For previous introduction, see S. P. I. No. 45982.

46051 to 46055. CUCURBITA PEPO L. Cucurbitaceæ. Squash.

From China. Presented by Mr. F. J. White, Shanghai Baptist College. Received April 27, 1918. Quoted notes by Mr. White.

"The seeds that I had myself were all lost while I was in America, so that I am unable to vouch for the authenticity of these seeds, but they are probably all right. I think you will find some of them very good if any are like the ones that I had. The large, round, flat squash is very prolific, very hardy, and very good in quality."

46051. "Squash; long, round."

46052. "Squash; round, bell shaped."

46053. "Squash; round, flat, No. 1."

46054. "Squash; round, flat, No. 2."

46055. "Squash; round, flat, No. 3."

46056. ZEA MAYS L. Poaceæ. Corn.

From Guadalajara, Jalisco, Mexico. Presented by the estate of Diego Moreno. Received May 4, 1918.

"*Maiz pepitilla*. For sowing it is necessary to have grain which produces many shoots, and for this reason it is sown here in two ways—one at a distance of 1 meter (39.37 inches) apart, three grains in a hill; the other, one grain for every 25 cm. (9.84 inches), the latter being the better method. In both cases the furrows are a distance of 84 cm. (33 inches) apart. On coming up, the plant is very slender, but after reaching a height of 25 cm., it becomes very graceful and robust. In hot lands or along the coast it yields in three months, in moderate temperature in six months, and in cooler lands from seven to eight months. It is very well adapted to lands where the rainfall is not abundant, for it is more drought-resistant than any other variety. The stalk grows more than that of other corn, and generally each stalk bears two ears if the land is ordinary and three and more ears when the land is very good. Another of the advantages which it has is that the ear rots less than that of any other variety, because the leaves inclose it perfectly at the end and do not permit water to enter when it is mature. The cob of the ear is very slender and the corn very high, for which reasons it yields much. When the yield is good it generally weighs 70 kilograms to the hectoliter (about 55 pounds to the bushel) and even 72 kilograms (56.5 pounds) when the yield is very good. This corn is appreciated because it contains much starch; when made into meal for use in the preparation of tortillas

it swells and gives better results than any other kind, thus it has a greater value than other varieties. As it contains less oil than other varieties, it is not good for fattening hogs, but is suitable for other animals." (*Moreno.*)

46057. LUPINUS CRUCKSHANKSII Hook. Fabaceæ. Lupine.

From London, England. Purchased from Messrs. Watkins & Simpson, Ltd., Covent Garden. Received May 4, 1918.

Obtained for the experiments of the Office of Forage-Crop Investigations.

A somewhat woody perennial, up to 5 feet high, native to the Andes of Chile. The seven to nine leaflets are lanceolate, obtuse, and glaucous underneath. The large fragrant flowers are white with a yellow standard, turning violet with age. (Adapted from *Curtis's Botanical Magazine*, pl. 3056.)

46058. ROSA CHINENSIS Jacq. Rosaceæ. Rose.

From Hertford, England. Plants purchased from Paul & Sons, Cheshunt Nurseries. Received May 16, 1918.

"*Ard's Rover.* A semiclimbing rose of the *Rosa chinensis* type. Flowers very large, dark red, abundantly produced. Useful for breeding red varieties." (*Dr. Walter Van Fleet.*)

46059 and 46060.

From London, England. Purchased from Messrs. Watkins & Simpson, Ltd., Covent Garden. Received May 4, 1918.

Obtained for the experiments of the Office of Forage-Crop Investigations.

46059. LUPINUS DOUGLASII Agardh. Fabaceæ. Lupine.

An herbaceous perennial from a slightly woody base, found along the coast of California from San Francisco to Los Angeles. The pubescent leaves have seven to nine oblanceolate leaflets 1 to 2 inches long. The large blue or purple flowers are scattered or subverticillate on long-peduncled terminal racemes. (Adapted from *Brewer and Watson, Botany of California*, vol. 1, p. 117.)

46060. LUPINUS POLYPHYLLUS Lindl. Fabaceæ. Lupine.

Variety *moerheimii*. This handsome and useful lupine differs from the true polyphyllus forms in its manner of growth, this being very much more compact and erect. One other point of difference worthy of note is that the lower flowers, which are the first to open, are very long lived and remain fresh until practically all the blooms have expanded. In *Lupinus polyphyllus* the lower flowers begin to fade some time before the topmost flowers have opened. *L. moerheimii* is very free flowering and of a beautiful bright-pink hue. (Adapted from *The Gardeners' Magazine*, vol. 51, p. 613.)

46061. EUCOMMIA ULMOIDES Oliver. Trochodendraceæ. Tu-chung.

From China. Procured by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 9, 1918.

"A Chinese caoutchouc tree, found wild on densely forested mountain slopes in southwestern Shensi and southeastern Kansu; also much cultivated in gar-

dens and planted here and there along roadsides. This tree has the peculiar property of exhibiting rubberlike threads of shining whitish color when pieces of bark or leaf are snapped across, but it shows this peculiarity more strongly in its winged fruits. On this account it is called *Shih mien shu*, meaning 'stone-cotton tree,' reference being made apparently to the resemblance of this caoutchouc or rubber to asbestos. This tree reaches a height of 80 feet and seems to grow best when sheltered by other trees. It might prove of value as a quick-growing ornamental tree for parks in those sections of the United States where the winters are not too severe." (Meyer.)

For previous introduction, see S. P. I. No. 40028.

46062 and 46063.

From China. Collected in Kih sien, Honan Province, by Mr. G. D. Schlosser, at the request of Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 9, 1918.

46062. *CELTIS SINENSIS* Pers. Ulmaceæ.

Hackberry.

A tree, native to China and Japan, growing to a height of 30 feet. The broadly ovate leaves, 2 to 4 inches long, are cordate at the base and acuminate at the apex, with a serrate-dentate margin. The dull orange-red fruits are borne on stout pedicels. This tree has proved hardy at the Arnold Arboretum, Jamaica Plain, Mass. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 2, p. 710.)

46063. *PYRUS CALLERYANA* Decaisne. Malaceæ.

Pear.

Introduced for experiments in producing a blight-resistant stock for cultivated varieties of pear and for hybridizing, in an effort to produce blight-resistant varieties.

46064 to 46073.¹

From Santos, Brazil. Procured by Mr. C. F. Deichman, American consul. Received May 9, 1913. Quoted notes by Mr. Deichman.

46064 to 46072. *PHASEOLUS VULGARIS* L. Fabaceæ.

Common bean.

46064. "No. 1. *Mulatinho claro* (brown bean; light color)."

46065. "No. 2. *Mulatinho oscuro* (brown bean; dark color)."

46066. "No. 4. *Vermelho* (red bean)."

46067. "No. 5. *Amarello* (yellow bean)."

46068. "No. 6. *Preto* (black bean)."

46069. "No. 7. *Branco grande* (white bean; large)."

46070. "No. 8. *Branco miudo* (white bean; small)."

46071. "No. 9. *Manteiga* (butter bean)."

46072. "No. 10. *Pintado* (spotted bean)."

46073. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ.

Cowpea.

"No. 3. *Fradino* (dwarf or French bean)."

¹ Introduced for use in a large series of experiments in testing and breeding varieties of South American legumes for the purpose of selecting or developing superior strains suited to the various conditions obtaining in different parts of the United States.

46074 and 46075.

From Brisbane, Australia. Presented by Mr. L. G. Corrie. Received May 2, 1918.

46074. *Gossypium barbadense* × *hirsutum*. Malvaceæ. **Cotton.**

"*Jones's hybrid*. This variety was first observed in numerous fields of cotton in 1906. and, as far as can be surmised, is a sport originating from a Sea Island variety (Seabrook) and an Upland type (Russell's Big Boll)." (Quoted from an article by Mr. D. Jones in the *Queensland Agricultural Journal* for March, 1916, p. 153.)

46075. *Ricinus communis* L. Euphorbiaceæ. **Castor-bean.**

"*Bancroft's hybrid*." Seed an inch long by five-eighths of an inch broad; light gray with irregular reddish brown markings. Introduced for experiments in testing the oil content of various forms.

46076. *Solanum tuberosum* L. Solanaceæ. **Potato.**

From Bogota, Colombia. Tubers presented by Mr. Jorge Ancizar. Received May 7, 1918.

"*Papa criolla*. Tubers shaped like the common potato, but only about an inch in shortest diameter. The Creole potatoes come out in three months and are delicious fried with their skins." (*Ancizar*.)

For previous introduction, see S. P. I. No. 44580.

46077 to 46079.

From Cheshunt, Hertford, England. Plants purchased from Paul & Sons. Received May 9, 1918. Quoted notes by Dr. Walter Van Fleet.

46077. *Rosa foetida* Herrmann. Rosaceæ. **Rose.**
(*R. lutea* Mill.)

"*Austrian Brier*. Single bloom. Supposed to be a garden representative of *Rosa foetida*, probably very near the type. Shrub 5 to 6 feet tall, branches slender, arching, and armed with short prickles, flowers 2 or more inches in diameter, bright golden yellow, in sparse clusters. Desirable for breeding yellow-flowered varieties."

46078. *Rosa chinensis* Jacq. Rosaceæ. **Rose.**

"*Red-Letter Day*. Garden form of *Rosa chinensis*. Dwarf shrub with erect stems growing about 2 feet high. Flowers single or semi-double, intense scarlet-crimson, best of its color. Desirable for breeding."

46079. *Rosa* sp. Rosaceæ. **Rose.**

"*Mrs. Emily Gray. Jersey Beauty* × *Rosa pernetiana*. *Jersey Beauty* has for parents *Rosa wichuraiana* and *Perle de Jardines*, the latter a yellow-flowered form of *R. odorata*. *Mrs. Emily Gray* is said to be the best yellow-flowered form of the *wichuraiana* type that has been developed. Desirable for breeding."

46080 to 46110.

From Darjiling, India. Presented by Dr. G. H. Cave, director, Lloyd Botanic Garden. Received May 11, 1918.

46080. *Boehmeria macrophylla* D. Don. Urticaceæ.

A pretty shrub with narrow, dentate leaves 6 to 12 inches in length and very long, drooping flower spikes. It is a native of Upper Burma and northeastern India, where it ascends to an altitude of 4,000 feet. The wood is light reddish brown and moderately hard, and the bark

46080 to 46110—Continued.

yields a good fiber which is used for ropes and fishing lines. (Adapted from *J. S. Gamble, Manual of Indian Timbers*, p. 658, 1902.)

For previous introduction, see S. P. I. No. 44860.

46081. CALLICARPA RUBELLA Lindl. Verbenaceæ.

An erect, single-stemmed shrub up to 20 feet in height, native of northern India and China. The branches and leaves are horizontal, the latter being cordate-oblong, softly pubescent above and tomentose beneath, with crenate-serrate margins. The small cymes, 2 inches across, of pink flowers are followed by small purple berries. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 569.)

46082. CRACCA CANDIDA (DC.) Kuntze. Fabaceæ.
(*Tephrosia candida* DC.).

A shrubby perennial, 4 to 7 feet high, with soft pubescent leaves and white flowers, native to the northern part of India up to an altitude of 3 000 feet. It is used as a cover crop and as a green manure. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, 2d ed., p. 39.)

46083. FRAXINUS FLORIBUNDA Wall. Oleaceæ.**Ash.**

"This is a large deciduous tree found growing in the Himalayas from Indus to Sikkim, between 5,000 and 8,500 feet. A concrete, saccharine exudation called manna is obtained from the stem of this tree and is employed as a substitute for the officinal manna. The sugar mannite, contained in this exudation, differs from cane and grape sugar in not being readily fermentable, although under certain conditions it does ferment and yields a quantity of alcohol varying in strength from 13 to 33 per cent. Like the officinal manna, this is used for its sweetening and slightly laxative properties. The wood is white with a reddish tinge and soft to moderately hard in structure, resembling in some respects the European ash. This tree is very valuable and is used in the manufacture of oars, sampan poles, plows, platters, spinning wheels, and for many other purposes." (Watt, *Dictionary of the Economic Products of India*, vol. 3, p. 442.)

46084. LAUROCERASUS ACUMINATA (Wall.) Roemer. Amygdalaceæ.

(Prunus acuminata Hook.)

Cherry laurel.

A tree, 30 to 40 feet high, found in the temperate portions of the central and eastern Himalayas, at altitudes of 4,000 to 7,000 feet. The branches are slender, with flat, smooth leaves 4 to 7 inches long, and yellowish white flowers one-fourth to one-third of an inch across in many-flowered racemes. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 317.)

For previous introduction, see S. P. I. No. 44092.

46085. LILIUM GIGANTEUM Wall. Liliaceæ.**Lily.**

A tall lily, up to 12 feet in height, found in the Himalaya Mountains from Kumaon and Gurhwal to Khasi and Sikkim in India. The 12 to 20 scattered, deep-green leaves are 12 to 18 inches in diameter on petioles a foot long at the base of the stem, reducing in size toward the top. The 6 to 12 deliciously fragrant flowers are 6 inches long and nearly as broad. The waxy segments of the perianth are purplish green outside, citron yellow changing to white inside, with purple midribs. The stamens are yellow. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 1877.)

46080 to 46110—Continued.

46086. *LILIUM NEPALENSE* D. Don. Liliaceæ.

Lily.

The beautiful reflexed flowers are very striking in appearance, being citron yellow toward the edge and deep maroon-purple or almost black within. If *L. nepalense* were only a little hardier it would doubtless be the most popular of all the oriental lilies. It is a native to the Himalayan region. (Adapted from *The Garden*, vol. 78, p. 159.)

46087. *MICHELIA CATHCARTII* Hook. f. and Thoms. Magnoliaceæ.

"This is a large tree which is found in the temperate forests of the Sikkim Himalayas at altitudes of 5,000 to 6,000 feet. The sapwood is large and white in color, while the heartwood, which is moderately hard, is a dark olive brown. The wood of this species is used for planking and would do well for tea boxes." (*Watt, Dictionary of the Economic Products of India*, vol. 5, p. 241.)

For previous introduction, see S. P. I. No. 41814.

46088. *MICHELIA EXCELSA* Blume. Magnoliaceæ.

A tall tree found at an altitude of 5,000 feet on the Himalayas and in the Khasi Hills in India. The twigs, the under sides of the leaves, and the flower buds are covered with soft, silky, brown pubescence. The leaves are oblong and acute, and the white flowers are 5 inches across, with about 12 segments to the perianth. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 43.)

46089. *MICHELIA LANUGINOSA* Wall. Magnoliaceæ.

A medium-sized tree with grayish white, tomentose twigs, native to India on the temperate slopes of the Himalayas up to an altitude of 7,000 feet. The oblong or lanceolate leaves, 10 inches long and 3 inches wide, on short petioles, are glabrous above and white tomentose underneath. The white flowers, 4 inches across, have about 18 perianth segments varying from obovate and obtuse outside to lanceolate and acute near the center. The fruit is densely woolly. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 43.)

46090. *MUCUNA MACROCARPA* Wall. Fabaceæ.

A woody climber found on the lower slopes of the Himalayas and in the Khasi Hills up to an altitude of 6,000 feet. The leaves are made up of three subcoriaceous, ovate leaflets, 6 to 8 inches long. The fascicled racemes of purple flowers, 3 inches long and 2 inches wide, are followed by pods 1½ feet long by 2 inches wide, containing 8 to 12 flattened-orbicular seeds. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 186.)

46091. *NYSSA SESSILIFLORA* Hook. f. and Thoms. Cornaceæ.

This is a large tree found in the forests of the Sikkim Himalayas above 5,000 feet; also in Martaban between 4,000 and 6,000 feet. The wood is gray, soft, and even grained, and is used for house building and other purposes about Darjiling. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 5, p. 438.)

46092. *PODOPHYLLUM EMODI* Wall. Berberidaceæ.

May-apple.

This plant is herbaceous, about a foot in height, with only two leaves, which are alternate on long stalks, palmately three to five lobed, purple spotted, and glabrous. The flower is solitary, axillary, or raised above the axil, nodding, cup shaped, white or pale rose colored. The berry is

46080 to 46110—Continued.

deep red in color and though described as tasteless is, it is said, sometimes eaten. (Adapted from *Gardeners' Chronicle*, 2d ser., vol. 18, p. 241.)

46093. *PRUNUS CERASOIDES* D. Don. Amygdalaceæ.
(*P. puddum* Roxb.)

A large tree, making a brilliant appearance when in flower, native to northern India at altitudes of 3,000 to 8,000 feet. The leaves are ovate to lanceolate, 3 to 5 inches long, with doubly serrate margins. The flowers, which appear before the leaves, are either solitary or in umbels and are rose-red or white. The acid fruits, on prominently thickened pedicels, are oblong and have a thin yellowish or reddish flesh. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 314.)

46094. *PRUNUS NAPAULENSIS* (Seringe) Steud. Amygdalaceæ. **Cherry.**

A small tree native to the temperate Himalayas at altitudes of 6,000 to 10,000 feet. The leaves are 4 to 6 inches long, broadly lanceolate with a sharp point, and crenate on the margins. The racemes, often 10 inches long, of white flowers, are followed by globose fruits nearly three-fourths of an inch in diameter with smooth, thick-walled stones. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 316.)

46095. *PYRULARIA EDULIS* (Wall.) DC. Santalaceæ.

A medium-sized thorny tree native to the tropical slopes of the Himalayas up to an altitude of 5,000 feet. The leaves are 3 to 7 inches long, rather fleshy, oblong, with entire margins. The staminate flowers are in racemes, and the pistillate are solitary, producing edible pear-shaped drupes, 2 inches long. (Adapted from *Hooker, Flora of British India*, vol. 5, p. 230.)

46096. *RHUS JAVANICA* L. Anacardiaceæ. **Sumac.**
(*R. semialata* Murray.)

"A sumac, found on stony mountain slopes, in ravines, and in wild places; growing into a tall shrub or a small tree. Leaves large, light green, pubescent, winged. Fruits borne in large spikes; berries coated with a sticky whitish wax which burns readily. The Chinese do not seem to utilize this wax in any way. Of value as an ornamental park shrub for the mild-wintered sections of the United States." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 40716.

46097. *ROSA MACROPHYLLA* Lindl. Rosaceæ. **Rose.**

A shrub native to the Himalayas and western China, becoming 8 feet or more in height, with erect stems and arching branches usually furnished with straight prickles up to half an inch in length. The leaves, which are composed of 5 to 11 leaflets, are up to 8 inches in length. The deep-pink or red flowers are up to 3 inches in width and are produced singly or in clusters of varying number. The elongated, pear-shaped fruits are bright red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 433.)

For previous introduction, see S. P. I. No. 43900.

46098. *ROSA SERICEA* Lindl. Rosaceæ. **Rose.**

The flowers are slightly cupped, pale pink or blush, almost white in the center, and the leaflets are small, with several deep serratures at the apex. (Adapted from *Journal of Horticulture*, vol. 43, p. 7.)

46080 to 46110—Continued.

46099. *RUBIA CORDIFOLIA* L. Rubiaceæ.

Madder.

An herbaceous creeper with perennial roots, which is met with in the hilly districts of India from the northwestern Himalayas eastward and southward to Ceylon. The Manjit root or East Indian madder is obtained for the most part from this species and is much employed by the natives of India for dyeing coarse cotton fabric or the threads from which it is woven various shades of scarlet, coffee brown, or mauve. The East Indian madder of commerce consists of a short stalk from which numerous cylindrical roots, about the size of a quill, diverge. These are covered with a thin brownish pulp which peels off in flakes, disclosing a red-brown bark marked by longitudinal furrows. Many different methods are used for dyeing with this madder, a short account of which may be found in Watt, Dictionary of the Economic Products of India, from which this description is adapted.

For previous introduction, see S. P. I. No. 39656.

46100. *SAMBUCUS ADNATA* Wall. Caprifoliaceæ.

Elder.

An ornamental perennial allied to the elderberry, with cymes of fragrant white flowers, 10 inches across, followed by bright-red fruits.

For previous introduction, see S. P. I. No. 41596.

46101. *SAMBUCUS JAVANICA* Reinw. Caprifoliaceæ.

Elder.

"This is a very widely distributed species ranging from the Malayan Archipelago to central Japan and western China and also found in eastern Africa. It is characterized by the slender-pediceled flowers, the presence of conspicuous abortive flowers, and the very wide and loose inflorescence with the longer rays subthyrsoid. It has red fruits and shows a tendency to have the upper leaflets more or less adnate to the rachis and sometimes decurrent." (*Sargent, Plantae Wilsonianae, vol. 1, p. 307.*)

For previous introduction, see S. P. I. No. 39671.

46102. *SAURAUJA NAPAULENSIS* DC. Dilleniaceæ.

A medium-sized tree found at altitudes of 5,000 to 7,000 feet in the Himalayas. The young parts of the tree are covered with scurfy tomentum mixed with brown scales. The leaves, 10 inches long and 4 inches wide, are grouped at the ends of the branches and are oblong-elliptic in outline with deeply serrate margins. The pink flowers, half an inch across, occur in axillary panicles and are followed by green, edible, sweet fruits with mealy flesh. (Adapted from *Hooker, Flora of British India, vol. 1, p. 286.*)

46103. *SOLANUM KHASIANUM* C. B. Clarke. Solanaceæ.

An herbaceous perennial from the Khasi Hills in India, with stout stems densely covered with yellow hairs and having straight prickles two-thirds of an inch long. The leaves, 7 inches long by 5 inches wide, are deeply lobed, hirsute, and prickly on both surfaces. The flowers, nearly an inch broad, are borne in lateral 1 to 4 flowered racemes, and the globose fruits are an inch in diameter. (Adapted from *Hooker, Flora of British India, vol. 4, p. 234.*)

46104. *SORBUS CUSPIDATA* (Spach) Hedl. Malaceæ.

(*Pyrus vestita* Wall.)

A deciduous tree which is a native of the eastern Himalayas and may be found growing from Gurhwal to Sikkim, at altitudes between 9,000

46080 to 46110—Continued.

and 10,000 feet. The fruit is edible and is sometimes used as food. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 377.)

For previous introduction, see S. P. I. No. 39133.

- 46105. SORBUS FOLIOLOSA** (Wall.) Spach. Malaceæ. **Mountain ash.**
(*Pyrus foliolosa* Wall.)

A small tree with densely woolly young shoots, found on the temperate slopes of the Himalayas. The pinnately compound leaves, 4 to 6 inches long, are made up of five to nine pairs of linear-lanceolate, obscurely serrate, coriaceous leaflets. The compound, tomentose corymbs of white flowers are followed by very small ovoid fruits. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 376.)

- 46106. SORBUS INSIGNIS** (Hook. f.) Hedl. Malaceæ. **Mountain ash.**
(*Pyrus insignis* Hook. f.)

"A small very robust tree, native of the Sikkim Himalayas at altitudes ranging from 8,000 to 11,000 feet. The branchlets are nearly as thick as the little finger, and the bud scales are rigid, chestnut brown in color, and shining. The younger parts are clothed with long, rather silky, rusty-brown wool, while the older parts are glabrous." (Hooker, *Flora of British India*, vol. 2, p. 377.)

For previous introduction, see S. P. I. No. 39134.

- 46107. STYRAX HOOKERI** C. B. Carke. Styracaceæ.

"This is a small tree frequently met with in Sikkim and Bhutan at altitudes between 6,000 and 7,000 feet. The wood is white, close grained, and moderately hard." (Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 3, p. 385.)

For previous introduction, see S. P. I. No. 41815.

- 46108. SYMPLOCOS THEAEFOLIA** D. Don. Symplocaceæ.

An erect tree of the eastern Himalayas, from Nepal to Bhutan, occurring at altitudes between 4,000 and 6,000 feet. It is common also in the Khasi Hills and in Martaban. The leaves of this species are used as an auxiliary with *Morinda tinctoria* and lac in dyeing. The wood is white and soft and is used for fuel and for rough house posts. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 3, p. 400.)

- 46109. VIBURNUM ERUBESCENS** Wall. Caprifoliaceæ.

A tall shrub or small tree common on the Himalayas up to an altitude of 10,000 feet. It has small ovate leaves, 3 inches long and 1 inch wide, and small pendulous corymbs of white flowers. The red, ellipsoid fruits are one-fourth of an inch long. (Adapted from Hooker, *Flora of British India*, vol. 3, p. 7.)

- 46110. ZANTHOXYLUM OXYPHYLLUM** Edgeworth. Rutaceæ.

An alternate-leaved shrub, with hooked prickles, native to the temperate and subtropical slopes of the Himalayas at altitudes of 4,000 to 9,000 feet. The pinnately compound leaves, about a foot long, have 3 to 10 pairs of ovate to elliptic leaflets with crenate-serrate margins. The flowers occur in many-branched umbellate cymes; and the tubercled fruits, the size of a pea, open transversely, showing the black seeds. (Adapted from Hooker, *Flora of British India*, vol. 1, p. 294.)

46111 to 46118. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From Reading, England. Tubers presented by Sutton & Sons. Received April 20, 1918.

46111. Sutton's *Harbinger*.

46112. Sutton's *Gladiator*.

46113. Sutton's *Early Ashleaf*.

46114. Sutton's *Drummond Castle*.

46115. Sutton's *Edinburgh Castle*.

46116. Sutton's *Berwick Castle*.

46117. Sutton's *Carrisbrooke Castle*.

46118. Sutton's *Dunnottar Castle*.

46119. EUCOMMIA ULMOIDES Oliver. Trochodendraceæ. Tu-chung.

From Suilokuo, Hupeh, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

An interesting deciduous tree somewhat resembling an elm in habit and foliage. The leaves and bark contain a remarkable substance resembling rubber.

For previous introduction and description, see S. P. I. No. 46061.

46120. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.

From Ichang, Hupeh, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

The *yang-tao*, as this deciduous climber is known in Szechwan Province, where it is native, has attracted considerable attention from travelers and missionaries in China, because of the high quality of its fruits and the ornamental value of the plant. Single plants often grow 30 feet in length, so that the vine will cover large areas of trellis. The leaves have a plushlike texture and an unusual dark-green color. The young shoots are bright pink and villous pubescent. The size and regular spacing of the leaves make this climber valuable where large areas of foliage are desired. The flowers are buff yellow to white, fragrant, and large size, being from 1 to 1½ inches in diameter. The abundance of these flowers adds greatly to the beauty of this plant and enhances its value as an ornamental. The following account of the fruit was written by Mr. Wilson while in China:

"Fruits abundantly produced, ovoid to globose, russet brown, more or less clothed with villous hairs. Flesh green, of most excellent flavor, to my palate akin to that of the gooseberry, but tempered with a flavor peculiarly its own."

The fruit is excellent when fresh, and it also makes very fine jam and sauce. Full information is lacking in regard to the fruit grown outside of China: some fruits received from California, however, bear out the high praise given the fruit by travelers. While this plant is not hardy in regions of severe winters, the rapid growth in the spring will make it a valuable ornamental, even in those regions where it is killed to the ground each winter. Vines have lived and made excellent growth near Washington during the

past eight years, but have not fruited. As an ornamental alone it is a very valuable vine. See David Fairchild, "Some Asiatic Actinidias," in Bureau of Plant Industry Circular No. 110, pp. 7-12.

For previous introduction, see S. P. I. No. 45588.

46121. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. Pummelo.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

"(No. 146b. Hingshanhsien, Hupeh, China. December 27, 1917.) A large specimen fruit. Used as perfumers; also to give flavor to alcoholic drinks." (Meyer.)

46122. CUCURBITA PEPO L. Cucurbitaceæ. Squash.

From Concepcion, Paraguay. Presented by Mr. T. R. Gwynn. Received June 15, 1918.

"Seeds of a squash which the Indians grow in this country. The plant is identical with the 'white bush scallop' squash; the fruit is somewhat smaller, of the same shape, and yellowish when mature." (Gwynn.)

46123. CITRUS MEDICA L. Rutaceæ. Citron.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

"(No. 148b. Ichang, Hupeh, China. December 21, 1917.) *Foo-tao* or *Foo-sohtao*. Used as perfumers; also to give flavor to alcoholic drinks." (Meyer.)

46124. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.

Grafted plants grown at the Plant Introduction Field Station, Chico, Calif. Numbered for convenience in recording distribution.

A perfect-flowered variety which was grown from seed received under S. P. I. No. 21781. The original plant of this introduction was sent to Mr. William Hertrich, San Gabriel, Calif. Scions from this plant were presented by him during the summer of 1917.

For description, see No. 46120.

46125 to 46130.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918. Numbered May, 1918.

46125. CITRUS sp. Rutaceæ.

"(155b. Ichang, Hupeh, China. December 21, 1917.) A hybrid of pummelo *Hsiang gan tze* and sweet orange (?) said to have come from Szechwan."

46126. CITRUS AURANTIUM L. Rutaceæ.

"(156b. Across the Yangtze near Ichang, Hupeh, China. December 22, 1917.) A bitterish orange resembling a large lemon called *Tsen tze*. Scions sent under No. 1297 [S. P. I. No. 45941.]"

46125 to 46130—Continued.

46127. CITRUS sp. Rutaceæ.

"(157b. Changyanghsien, Hupeh, China. December 9, 1917.) An orange resembling a lemon. Chinese name *Ba ehr gan*. Scions sent under No. 1291 [S. P. I. No. 45934]."

46128. CITRUS ICHANGENSIS Swingle. Rutaceæ.

Ichang lemon.

"158b. Various types from divers localities."

46129. CHAENOMELES LAGENARIA CATHAYENSIS (Hemsl.) Rehder. Malaceæ.
(*Pyrus cathayensis* Hemsl.)

"(159b. Ichang, Hupeh, China. December 21, 1917.) *Mu kua*. Used as a room perfumer."

46130. CHAENOMELES SINENSIS (Thouin) Koehne. Malaceæ.
(*Pyrus sinensis* Poir.)

Chinese quince.

"(160b. Ichang Hupeh, China. December 31, 1917.) *Mu li*. It might possibly prove a good stock for loquats and pears in the Gulf States. Used as a room perfumer."

For an illustration of a full-sized tree, see Plate V.

46131. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.

Plants grown from the seed of S. P. I. No. 21781 sent to the Plant Introduction Field Station, Chico, Calif. by Mr. William Hertrich, San Gabriel, Calif., in the summer of 1917. Numbered for convenience in recording distribution.

For previous introduction, see S. P. I. No. 46124.

46132. CITRUS sp. Rutaceæ.

From Ichang, Hupeh, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

"Large fruit, about 4 inches in diameter." (W. T. Swingle.)

46133 to 46135.

From New South Wales, Australia. Presented by Mr. B. Harrison, Burringbar. Received June 15, 1918.

46133. CHAETOCHLOA NIGRIROSTRIS (Nees) Skeels. Poaceæ. Grass.
(*Setaria nigrirostris* Dur. and Schinz.)

A hardy tufted grass which has made good growth. Although the leaves are a little hard, there is a very large quantity in proportion to the stem: appears to be a quick succulent grower: carries a good quantity of seed: and grows well in New South Wales. (Adapted from an article by E. Breakwell, in *Agricultural Gazette, New South Wales, Feb. 2, 1916.*)

46134. GOSSYPIMUM sp. Malvaceæ.

Cotton.

"*Harrison's Hybrid*. A most prolific variety hybridized by myself from Caravonica and Indian Burhi. The cotton is of splendid quality. From a 3-year-old tree." (Harrison.)

46135. OPUNTIA sp. Cactaceæ.

Cactus.

"A spineless and seedless cactus which has been produced by me after several years of careful cultivation and which should prove of real value

46133 to 46135—Continued.

in the semiarid sections of the United States. Stock eat it with great avidity even when grass is abundant; and as it is closely related to the sweet-leaf cactus (*Opuntia cochinellifera*), its feeding value is much greater than the other varieties commonly used for fodder." (*Harrison.*)

46136. PISTACIA CHINENSIS Bunge. Anacardiaceæ.**Chinese pistache.**

From Changsha, Hunan, China. Purchased from Mr. J. H. Reisner, University of Nanking, Nanking, through Mr. Nelson T. Johnson, American consul. Received at the Plant Introduction Field Station, Chico, Calif., June 20, 1918.

"*Huang lien shu.* A very promising shade tree for those sections of the United States where the summers are warm and the winters but moderately cold. The young leaves are carmine red and the fall foliage gorgeously scarlet and yellow. The wood, which is very heavy and not often attacked by insects, is employed in the manufacture of furniture. From the seeds an oil is obtained which is used for illuminating purposes. The young, partly expanded foliage buds are sparingly eaten when boiled, like spinach. The staminate trees invariably grow larger and more symmetrical than the ones that bear the pistillate flowers." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 45593.

46137. DERINGA CANADENSIS (L.) Kuntze. Apiaceæ. Mitsuba.
(*Cryptotaenia canadensis* DC.)

From Yokohama, Japan. Presented by Mr. Barbour Lathrop. Received June 20, 1918.

This plant, which is allied to celery, parsnips, and carrots, has been cultivated by the Japanese for many generations. Mr. Lathrop, in sending in seed purchased from the Yokohama Nursery Co., says: "Mitsuba, they say, costs less than udo, and far more of it is consumed by the poor. Every part of the plant is eaten, and its leaves, stems, and roots are cooked as desirable edibles. They say also that the stems, besides being cooked, are eaten as celery is with us. Like udo, it grows in light, rather poor soil; is planted from seed, but requires less care in growing, and reaches the market at far less expense. To use their own expression, 'Mitsuba is popular with everybody from the highest rank to the lowest.'" Mr. Lathrop also procured the following statement from the Yokohama Nursery Co. on its culture and uses:

"Sow the seed any time from September to about the middle of April in rows about 1½ to 2 feet apart, somewhat thickly in bands 5 to 6 inches wide, and cover lightly with soil. After the seedlings are an inch or so tall, thin out to 2 to 3 inches apart; they grow best in partially sheltered moist places. In central Japan, where the climate is mild, the seed is usually sown in spring, from about March until May, between the furrows of wheat, barley, or beans, which give enough shade to the young seedlings; if the seed be sown in full exposure after May it will not germinate, so it is essential to sow the seed before the weather gets too warm. After wheat, barley, or beans are harvested the ground should be hoed and manured with liquid oil cake or bone meal, to invigorate the roots. After the leaves and stalks die, from about December, the roots can be dug and brought into the forcing frame or malt bed; or they can be left alone in the field, and just before the new growth begins to show early in spring, heap up 5 to 6 inches of soil, in the same manner as asparagus is cul-

tivated. They are fit for market when the young sprouts begin to break through the surface of the soil. The roots, being perennial, can be used over and over again for two to three years after the stalks are cut off, but, as the roots are also edible, it is usual to dig up the whole plant; moreover, the young stalks keep better with the roots on.

"In cold regions, like Hokkaido or northern Hondo, the roots must be well covered with earth in winter. The seeds collected from 1-year-old plants are considered to be worthless, as they give rise to plants which run to flowering shoots the first year. Properly, the seed should be collected from 2-year-old plants. The seed keeps its vitality for three years. Twenty pounds are required per acre. The average crop of last two seasons realized about \$200 per acre in Japan.

"As to soil, loam with plenty of moisture is preferable, but light black soil or any other light soil, provided the ground is not too dry, serves very well.

"Cooking methods: (1) The green leaves and stalks are eaten raw, with vinegar and sauce as a salad; also they are used as an ingredient in soups, imparting a good flavor. (2) The young blanched stalk is eaten raw like celery; or, after boiling, is eaten like asparagus, with sauce. Either way it is edible, skin and all. (3) The roots, after the young blanched stalks are cut off, are chopped into pieces about 1½ inches long and parched in a pan with lard or butter until they get quite tender; then sugar and soy is added according to taste. There are several other methods of cooking, but the above will be found the most suitable for the foreign palate."

Received as *Cryptotaenia japonica*.

For previous introduction, see S. P. I. No. 45247.

46138. *HIBISCUS MACROPHYLLUS* Roxb. Malvaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received June 22, 1918.

A tree or shrub of eastern Bengal and the Eastern Peninsula, the bark of which yields a strong cordage fiber valued by the Burmans. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 4, p. 242.)

46139. *CITRUS* sp. Rutaceæ.

From Ichang, Hupeh, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

The fruit was decomposed and the label accompanying it illegible.

46140. *CASSIA GRANDIS* L. f. Cæsalpiniaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received June 25, 1918.

"A small wing-leaved tree of the legume family, producing an abundance of yellow flowers native to the East Indies and now common in most tropical countries. It produces a smooth cylindrical pod twice the thickness of the finger and sometimes 2 feet in length. The interior is divided into numerous transverse portions, each containing a seed embedded in pulp of a sweet taste, which forms an important laxative medicine. The leaves, as also those of *C. alata*, are used as a cure for ringworm." (*Smith, Dictionary of Popular Names of Economic Plants*.)

For previous introduction, see S. P. I. No. 33781.

46141 to 46145.¹ *PHASEOLUS COCCINEUS* L. Fabaceæ.**Scarlet Runner bean.**

- 46141.** No. 1. Dark brown, mottled with white and light brown.
46142. No. 2. Deep livid² or vinaceous brown, mottled with black.
46143. No. 3. Livid brown, not mottled.
46144. No. 4. Cinnamon or avellaneous, not mottled.
46145. No. 5. Cinnamon or avellaneous, mottled.

46146. *SALVIA HISPANICA* L. Menthaceæ.

From Coyoacan, Mexico. Presented by Mrs. Zelia Nuttall. Received May 14, 1918.

An herbaceous perennial with ovate, serrate leaves and quadrangular spikes of blue flowers. The mucilaginous seeds are used in making the Mexican drink called "chia."

46147. *ASTROCARYUM POLYSTACHYUM* Wendl. Phomicaceæ. **Palm.**

From San Jose, Costa Rica. Presented by Mr. Ad. Tonduz, Administracion General de la Tributacion Directa. Received May 16, 1918.

Coyolillo. "Palm fruits collected in the Barra del Colorado, Atlantic coast of Costa Rica." (*Tonduz.*)

"A palm, 6 to 10 feet in height, with irregularly divided leaves. The round fruits, covered with bristles, are clustered in peduncled cones. From the hot districts of both coasts. 'Coyolillo' is perhaps applied to other species." (*Pittier, Plantas Usuales de Costa Rica, p. 85.*)

46148 to 46150.

From the city of Panama, Panama. Presented by Sr. Ramon Arias-Feraud. Received May 17, 1918. Quoted notes by Sr. Arias-Feraud.

- 46148.** *ACHRAS ZAPOTA* L. Sapotaceæ. **Sapodilla.**
(A. zapota L.)

"*Nisberry* seeds. This tree grows about 20 feet high and produces one of the best tropical fruits."

For previous introduction and description, see S. P. I. No. 44890.

- 46149.** *ANNONA SQUAMOSA* L. Annonaceæ. **Sugar-apple.**

"Yellow anona seeds. Nice fruits."

- 46150.** *CHRYSOPHYLLUM CAINITO* L. Sapotaceæ. **Caimito.**

"Purple *star-apple* seeds."

A handsome tropical American fruit and ornamental tree, evergreen, up to 50 feet high, with beautiful broad leaves, smooth and green above and silky and golden yellow on the under surface. Fruit the size of an apple with star-shaped core and purple flesh and skin. The pulp is said to be delicious if the fruit is left on the tree until ripe. Will not stand frost.

¹ See footnote on page 19.

² The names of colors accord with Ridgway's Color Standards and Nomenclature.

46151 to 46160.¹

From Peru. Presented by Luis Roos & Co., of Callao, Peru, through Mr. W. W. Handley, American consul. Received May 17, 1918. Quoted notes by Mr. Roos.

46151. *CICER ARIETINUM* L. Fabaceæ. Chick-pea.

"No. 1. *Garbanzos*. These are grown at Pacasmayo and Chincha."

46152. *LENTILLA LENS* (L.) W. F. Wight. Fabaceæ. Lentil.
(*Lens esculenta* Moench.)

"No. 3. *Lentejas*. These are grown at Trujillo."

46153. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.

"No. 7. *Pallares*. These are from Chincha."

46154 to 46157. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46154. "No. 2. *Panamitos*. These are from Pacasmayo, the same kind of bean as grown at Chincha, but of a much better quality."

46155. "No. 5. *Negros*. These are from Chincha."

46156. "No. 6. *Bayos*. These are grown in the northern part of Peru, the principal market being San Pedro and Guadalupe (Pacasmayo)."

46157. "No. 9. *Cocachos*. These are from Chincha."

46158 and 46159. *PISUM SATIVUM* L. Fabaceæ. Garden pea.

46158. "No. 10. *Alverja verde*. These are grown at Trujillo."

46159. "No. 4. *Alverja amarilla*. These are grown all over the northern part of Peru. Principal market, Pacasmayo."

46160. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

"No. 8. *Castilla*. These are grown at Casma."

46161 to 46163.¹

From Buenos Aires, Argentina. Procured by Mr. W. Henry Robertson, American consul general. Received May 18, 1918. Quoted notes by Mr. Robertson.

46161. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.

"*Porotos manteca*."

46162. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

"*Porotos saltenos*."

46163. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

"*Porotos tapes*."

46164 to 46166.¹

From Montevideo, Uruguay. Presented by Mr. Domingo Basso, through Mr. William Dawson, American consul. Received May 18, 1918. Quoted notes by Mr. Basso.

¹ See footnote on page 19.

46164 to 46166—Continued.

46164 and 46165. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

46164. "*Reyna*. This seed is said to have been grown locally from imported Italian seed, and the variety is known locally as 'Poroto (bean) de la Reyna.'"

46165. "*Aguila*. This seed is said to have been grown locally from imported Italian seed, and the variety is known locally as 'Poroto (bean) Aguila.'"

46166. VICIA FABA L. Fabaceæ. Broad bean.

"*Sevilla*. This seed is said to have been grown locally from imported Italian seed, and the variety is known locally as '*Haba* (bean) *Sevilla*.'"

46167 to 46177.¹

From Puerto Cabello, Venezuela. Procured by Mr. Frank A. Henry, American consul. Received May 21, 1918. Quoted notes by Mr. Henry.

46167 and 46168. CAJAN INDICUM Spreng. Fabaceæ. Pigeon-pea.

46167. "*Quinchonchos*."

46168. "*Quinchonchos mulatos*."

46169 to 46171. PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.

46169. "*Tapiramos blanquineta*." **46171.** "*Tapiramos blancos*."

46170. "*Tapiramos cocineras*."

46172 and 46173. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

46172. "*Caraotas negras*."

46173. "*Caraotas rosadas*."

46174. PISUM SATIVUM L. Fabaceæ.

Garden pea.

"*Chicharos*."

46175. VIGNA CYLINDRICA (Stickm) Skeels. Fabaceæ.

Catjang.

"*Frijoles blancos*."

46176 and 46177. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

46176. "*Frijoles bayos*."

46177. "*Frijoles morados*."

46178 to 46183.¹

From Maracaibo, Venezuela. Purchased by Mr. Emil Sauer, American consul. Received May 21, 1918. Quoted notes by Mr. Sauer.

46178. PHASEOLUS LUNATUS L. Fabaceæ.

Lima bean.

"*Caraotas coloradas*."

46179 to 46181. PHASEOLUS VULGARIS L. Fabaceæ.

Common bean.

46179. "*Caraotas negras*."

46181. "*Caraotas pintadas*."

46180. "*Caraotas bayas*."

46182 and 46183. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

46184 to 46191.¹

From Georgetown, British Guiana. Purchased by Mr. G. E. Chamberlin, American consul. Received May 21, 1918.

46184. CAJAN INDICUM Spreng. Fabaceæ.

Pigeon-pea.

46185. DOLICHOS LABLAB L. Fabaceæ.

Purple bonavist bean.

¹ See footnote on page 19.

46184 to 46191—Continued.

46186. *DOLICHOS LABLAB* L. Fabaceæ. Bonavist bean.
 Variety unknown.
46187. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.
46188. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.
46189. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.
46190. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.
46191. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.
 Also known as "Black-eyed bean."

46192. *HIBISCUS MACROPHYLLUS* Roxb. Malvaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received May 22, 1918.

A shrub or small tree, native to India, sparsely covered with brown, villous, tufted hairs. The orbicular-cordate leaves, about 6 inches across, with petioles 8 inches long, are usually entire and are covered underneath with dense hairs. The many-flowered terminal cymes are made up of purple flowers 4 inches in diameter. (Adapted from *Hooker, Flora of British India, vol. 1, p. 337.*)

46193 to 46203.¹

From Antofagasta, Chile. Procured by Mr. Thomas W. Voetter, American consul. Received May 22, 1918. Quoted notes by Mr. Voetter.

46193. *PHASEOLUS COCCINEUS* L. Fabaceæ. Scarlet Runner bean.
 "No. 8. *Pallares.*"
46194. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.
 "No. 9. *Pallares achatados.* Probably from Peru."
- 46195 to 46202. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.
46195. "No. 1. *Bayos.*" 46200. "No. 6. *Frutillas* (strawberry)."
46196. "No. 2. *Burritos.*"
46197. "No. 3. *Caballeros.*" 46201. "No. 7. *Ovalitos.*"
46198. "No. 4. *Canarios.*" 46202. "No. 10. *Triguitos.*"
46199. "No. 5. *Coscorrones.*"
46203. *ZEA MAYS* L. Poaceæ. Corn.

"Province of Tachna, Chile. Used for toasting and for making 'chicha,' a fermented beverage."

46204. *GARCINIA MANGOSTANA* L. Clusiaceæ. Mangosteen.

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received May 25, 1918.

"This delicious fruit is about the size of a madarin orange, round and slightly flattened at each end, with a smooth, thick rind, rich red-purple in color with here and there a bright, hardened drop of the yellow juice, which marks some injury to the rind when it was young. As these mangosteens are sold in the Dutch East Indies, heaped up on fruit baskets, or are made into long, regular bunches with thin strips of braided bamboo, they are as strikingly handsome as anything of the kind can well be; but it is only when the fruit is opened that its real beauty is seen. The rind is thick and tough and

¹ See footnote on page 19.

in order to get at the pulp inside it requires a circular cut with a sharp knife to lift the top half off like a cap, exposing the white segments, five, six, or seven in number, lying loose in the cup. The cut surface of the rind is of a most delicate pink color and is studded with small yellow points formed by the drops of exuding juice. As you lift out of this cup, one by one, the delicate segments, which are the size and shape of those of a mandarin orange, the light pink sides of the cup and the veins of white and yellow embedded in it are visible. The separate segments are between snow white and ivory in color and are covered with a delicate network of fibers, and the side of each segment where it presses against its neighbor is translucent and slightly tinged with pale green. As one poises the dainty bit of snowy fruit on his fork and looks at the empty pink cup from which it has been taken, he hardly knows whether the delicate flavor or the beautiful coloring of the fruit pleases him the more, and he invariably stops to admire the rapidly deepening color of the cut rind as it changes on exposure to the air from light pink to deep brown. The texture of the mangosteen pulp much resembles that of a well-ripened plum, only it is so delicate that it melts in your mouth like a bit of ice cream. The flavor is quite indescribably delicious and resembles nothing you know of; and yet it reminds you, with a long aftertaste, of all sorts of creams and ices. There is nothing to mar the perfection of this fruit, unless it be that the juice from the rind forms an indelible stain on a white napkin. Even the seeds are partly or wholly lacking, and when present they are so thin and small that they are really no trouble to get rid of. Where cheap and abundant, as in Java, one eats these fruits by the half peck and is never tired of them; they produce no feeling of satiety, such as the banana and the mango do, for there is little substance to the delicate pulp." (*David Fairchild.*)

46205. *PHYLLOSTACHYS* sp. Poaceæ.

Bamboo.

From Indio, Calif. Plants presented by Mr. Bruce Drummond, Government Date Garden. Received May 3, 1918.

"A package of the rhizomes from the giant bamboo that we have here at the garden. This is the bamboo growing on Mr. W. S. Tevis's place at Bakersfield, Calif. Plants were obtained by Mr. Rixford and sent to us in 1913. It is doing fine, and is the only bamboo we have here that is making a rapid spread.

"I have great hopes of the future use for this bamboo, even though it does not get higher than 20 or 25 feet. I think that we can utilize the canes in holding up the clusters of dates, which will be very necessary as our palms get older. It makes its growth in the early part of April." (*Drummond.*)

46206. *CYMBOPETALUM PENDULIFLORUM* (Dunal.) Baill. Annonaceæ. Sacred earflower.

From Coban, Guatemala. Purchased from Mr. R. S. Anderson. Received May 3, 1918.

"A shrub or small tree with distichous, subsessile, oblanceolate leaves, solitary flowers borne on long slender peduncles issuing from the internodes of the smaller branches; sepals broadly ovate or suborbicular, cuspidate, reflexed at length; outer petals similar to the sepals but much larger; inner petals thick and fleshy, their margin involute, causing them to resemble a human ear. The pungently aromatic flowers when fresh are greenish yellow, with the inner surface of the inner petals inclining to orange color, at length turning brownish purple or maroon, breaking with a bright orange-colored fracture. The tree is planted for the sake of its fragrant flowers, the petals of which are dried and are used medicinally as well as for imparting a spicy flavor to food. They

were used by the ancient Mexicans, before the introduction of cinnamon and other spices from the East Indies, for flavoring their chocolate. This species is native to the mountains of southern Mexico and Guatemala." (W. E. Safford.)

46207 to 46217.¹

From Sao Paulo, Brazil. Procured by Mr. R. L. Keiser, American consul, from the Industrias Reunidas F. Matarazzo. Received May 25, 1918.

46207 to 46216. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46207. <i>Branços.</i>	46212. <i>Manteiga.</i>
46208. <i>Canario.</i>	46213. <i>Mulatinho.</i>
46209. <i>Cavallo brancos.</i>	46214. <i>Pretos.</i>
46210. <i>Cavallo marrão.</i>	46215. <i>Riscados.</i>
46211. <i>Cavallo mulatinho.</i>	46216. <i>Roxo.</i>

46217. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.
Frade.

"The seed transmitted is that known as *feijão secca*, or dry beans. The State of Sao Paulo produces two crops of beans annually, these being distinguished as wet and dry according to the season of growth. The *feijão mulatinho* produces three crops annually, maturing rapidly. The transportation for any considerable distance or the storage of the wet crop is difficult, owing to its tendency to damage by worms. The dry crop is practically free from this defect." (Keiser.)

46218. *DIOSCOREA BULBIFERA* L. Dioscoreaceæ. Yam.

From Honolulu, Hawaii. Tubers presented by Mr. J. E. Higgins, Hawaii Agricultural Station. Received May 27, 1918.

Obtained for testing at various points in the South. Mr. Higgins states that it is not generally grown in Hawaii.

46219. *IPOMOEA BATATAS* (L.) Poir. Convolvulaceæ. Sweet potato.

From Mayaguez, Porto Rico. Cuttings presented by Mr. T. B. McClelland, Agricultural Experiment Station. Received May 27, 1918.

"I am sending you cuttings of the sweet potato known locally as 'Mameya.'" (McClelland.)

46220. *LANSIUM DOMESTICUM* Jack. Meliaceæ. Langsat.

From Buitenzorg, Java. Presented by the Botanic Garden. Received May 27, 1918.

A moderate-sized ornamental tree, native to the Malay Peninsula. It bears long pendent clusters of closely packed berries which have a thin tough skin inclosing opaque aromatic juicy pulp. The berries are pale yellow when ripe and are said to be much relished in their native country, being "eaten fresh or variously prepared." It has been described as one of the finest fruits of the Malay Peninsula. (Adapted from Macmillan, *Handbook of Tropical Gardening and Planting*, 2d ed., p. 168.)

¹ See footnote on page 19.

46221. ANNONA SQUAMOSA L. Annonaceæ. Sugar-apple.

From Lawang, Java. Presented by Mr. M. Buysman, Experiment Station.
Received May 27, 1918.

"I have just sent you some seeds of a very good variety of *Annona squamosa*. Whether this will prove to come true from seed I do not know, but I think it might be tried." (*Buysman*.)

46222. CASSIA HIRSUTA L. Cæsalpiniaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received May 28, 1918.

An ornamental shrubby or subshrubby plant. The finely cut pinnate leaves and short racemes of yellow flowers are quite attractive.

46223. ORYZOPSIS MILIACEA (L.) Benth. Poaceæ. Grass.

From Adelaide, South Australia. Purchased from E. & W. Hackett, Ltd.
Received May 29, 1918.

"A tufted perennial with loose, open panicles with spreading branches. A form with numerous sterile lower branches of the panicle is sometimes cultivated for ornament." (*A. S. Hitchcock*.)

46224. CORIARIA THYMIFOLIA Humb. and Bonpl. Coriariaceæ.

From Auckland, New Zealand. Presented by Mr. G. J. Clapham, Kohu Kohu. Received May 29, 1918.

A South American plant, the bark and roots of which are rich in tannin; the fruit is said to be rather poisonous.

For previous introduction and description, see S. P. I. No. 42817.

46225. PAPAVER SOMNIFERUM L. Papaveraceæ. Poppy.

From Yokohama, Japan. Presented by Mr. Barbour Lathrop. Received June 3, 1918.

Introduced for the experiments of the Office of Drug-Plant and Poisonous-Plant Investigations and not for general distribution.

46226 to 46234.¹

From Valparaiso, Chile. Presented by Mr. L. J. Kenna, American consul general. Received June 5, 1918.

46226. CICER ARIETINUM L. Fabaceæ. Chick-pea.
Garbanzo. (1917 crop.)

46227. LENTILLA LENS (L.) W. F. Wight. Fabaceæ. Lentil.
(Lens esculenta Moench.)

Lentejas de Chillan. (Crop of 1917.)

46228. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.
Pallares. (Crop of 1917.)

46229 to 46232. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

46229. Bayos. (Crop of 1917.)

46230. Caballeros. (Crop of 1917.)

46231. Coscorones. (Crop of 1917.)

46232. Zurritos. (Crop of 1917.)

¹ See footnote on page 19.

46226 to 46234—Continued.**46233 and 46234.** *PISUM SATIVUM* L. Fabaceæ.**Garden pea.****46233.** *Arvejas blancas.* (Crop of 1917.)**46234.** *Petit pois.* (1917 crop.)**46235.** *CACARA EROSA* (L.) Kuntze. Fabaceæ.**Yam bean.***(Pachyrhizus angulatus* Rich.)

From Kingston, Jamaica. Presented by Mr. William Harris, Government botanist and superintendent of Public Gardens, Hope Gardens. Received June 6, 1918.

A twining tuberous-rooted vine cultivated throughout the Tropics for its edible roots, which are very palatable and are prepared for use in a number of different ways.

For previous introduction, see S. P. I. No. 44916.

46236. *ACHRADELPHA MAMMOSA* (L.) O. F. Cook. Sapotaceæ.*(Lucuma mammosa* Gaertn. f.)**Sapote.**

From the city of Panama, Panama. Presented by Sr. Ramon Arias-Feraud. Received June 8, 1918.

"The most important member of the genus is without doubt the sapote, or mamey sapote, a common fruit in Cuba, and not infrequently seen on the Central American mainland. It is said to prefer a deep, rich soil and a rainfall of about 70 inches per annum. The fruit is commonly elliptical and is about 6 inches in length. Within the thick woody skin, somewhat rough and rusty brown on the surface, is the soft melting flesh, of a beautiful reddish salmon color and of about the same consistency as a ripe cantaloupe. The large elliptical seed can be lifted out of the fruit as easily as that of an avocado; it is hard, brown, and shiny, except on the ventral surface, which is whitish and somewhat rough. To one unaccustomed to tropical fruits the flavor of the mamey sapote is at first somewhat cloying, because of its utter lack of acidity; when made into a sherbet, however, as is done in Havana, it is delicious and sure to be relished at first trial. Although natives of tropical countries commonly eat the fruit while fresh, it is also made into marmalade or used as a 'filler' in making guava cheese. The Cubans prepare from it a thick jam known as *crema de mamey colorado*, which is delicious. The fruits are picked when mature and laid away in a cool place to ripen, which takes about a week. If shipped as soon as picked from the tree they can be sent to northern markets without difficulty and are occasionally exported from Cuba and Mexico to the United States. The season of ripening is during the summer; in Costa Rica the tree is said to lose its foliage in the dry season, flowering at the same time. The seed contains a large oily kernel which has a strong smell and a bitter taste. According to Pittier, it is used in Costa Rica, after being finely ground, to prepare an exquisite confection; the same authority states that it is sometimes used by the Indians, after being boiled, roasted, and ground, to mix with cacao, imparting a bitter taste to the beverage. The foliage of the mamey sapote resembles that of the loquat (*Eriobotrya japonica*), except in its lighter color and entire margins. Propagation is by seed, young trees coming into bearing at the age of 5 to 7 years. Before planting it is well to remove the hard outer husk from the seed; it is then easily germinated by planting in light sandy loam, barely covering it with soil." (*Wilson Popenoe*.)

46237. ACHRAS ZAPOTA L. Sapotaceæ. Sapodilla.*(A. sapota L.)*

From the city of Panama, Panama. Presented by Sr. Ramon Arias-Feraud. Received June 8, 1918.

46238. MANGIFERA INDICA L. Anacardiaceæ. Mango.

From the city of Panama, Panama. Presented by Sr. Ramon Arias-Feraud. Received June 8, 1918.

"Seeds of the best kind of mangos which we have here, called 'Calidad' (quality) mangos." (*Arias-Feraud.*)

46239. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.*(Prunus persica Stokes.)*

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Received June 8, 1918.

"*Transvaal yellow*. This variety is one of the hardiest we have in this country and the most immune to the more common fungous pests of the peach." (*Evans.*)

46240. LITCHI CHINENSIS Sonner. Sapindaceæ. Lychee.*(Nephelium litchi Cambess.)*

From Honolulu, Hawaii. Procured from Mr. Chang Chong, through Mr. J. E. Higgins, horticulturist, Hawaii Agricultural Experiment Station. Received June 17, 1918.

The lychee is a small tree, native to China, with dense foliage of rich green shiny leaves, racemes of greenish flowers, and clusters of spherical fruit about 1 inch in diameter. Each fruit contains one seed in a firm jellylike whitish pulp or aril of delicious flavor. In China the production of dried lychee fruit is a large industry. (Adapted from *Wilcox, Tropical Agriculture*, p. 125.)

Excellent results are now being obtained in rooting the cuttings in a moist chamber.

For previous introductions, see S. P. I. Nos. 40916 and 40973.

46241. LAWSONIA INERMIS L. Lythraceæ. Henna.*(L. alba Lam.)*

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received March 21, 1918. Numbered June, 1918.

An interesting shrub commonly known as henna, camphire, cypress shrub, or Egyptian privet, grown throughout India, Persia, Syria, and northern Africa, where its powdered leaves are used as a hair dye and as a cosmetic. It imparts a reddish orange color. Plants attain a height of 8 or 10 feet and bear smooth oval or lance-shaped entire leaves and panicles of small white sweetly scented flowers, which are used in perfumery. This species is reported as being a very useful and ornamental hedge plant. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 4, p. 597.)

46242. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.*(Sechium edule Swartz.)*

Fruits received in the autumn of 1916 from Mr. H. S. Zoller, Brooksville, Fla. Numbered, for convenience in distribution, June, 1918.

Zoller. A medium-sized, dark-green chayote; flat and broad pear shaped, noncorrugated, and almost free from spines.

46243 to 46248.

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Plant Breeding Station. Received May 21, 1918.

Legumes grown for green manure. Introduced for experimentation by the Office of Forage-Crop investigations.

46243. CASSIA PATELLARIA DC. Cæsalpiniaceæ.

A low, herbaceous perennial with somewhat the appearance of our common sensitive plant, *Cassia nictitans*.

46244. CASSIA PUMILA Lam. Cæsalpiniaceæ.

A spreading, subshrubby forage plant with numerous spreading stems about 1 foot long, distributed throughout tropical Asia and Australia.

46245. CROTALARIA ALATA Buch.-Ham. Fabaceæ.

A suberect undershrub, 1 to 2 feet high, with the stem and underside of the leaves covered with a short, silky pubescence. (Adapted from *Hooker, Flora of British India, vol. 2, p. 69.*)

46246. CROTALARIA USARAMOENSIS Baker f. Fabaceæ.

A spreading, herbaceous forage plant from Usaramo, German East Africa, closely allied to *C. lanceolata*. (Adapted from *Journal of the Linnean Society, vol. 42, p. 346.*)

46247. INDIGOFERA SUMATRANA Gaertn. Fabaceæ.

Indigo.

This is the form of *Indigofera tinctoria* that was introduced from the East into the West Indies, and is the *I. tinctoria* of Lunan. If, therefore, it be deemed necessary to give this plant a separate name and to remove it from being one of the cultivated states of *I. tinctoria* L., then it will have to be called *I. sumatrana* Gaertn. In addition to India (where it is largely in use in the north from Bihar and Tirhut westward by north to the Punjab) it also occurs in tropical Africa and Formosa. It may be distinguished from the southern form of *I. tinctoria* by its leaflets, which are larger and ovate-oblong or oblong, instead of obovate or suborbicular. The pods in *I. sumatrana* are also shorter, thicker, and blunter at the apex, and are usually more numerous and straighter than in the Madras form. (Adapted from *Watt, Commercial Products of India, p. 663.*)

46248. INDIGOFERA SUFFRUTICOSA Mill. Fabaceæ.

(*I. anil* L.)

A copiously branched shrub, 3 to 5 feet high, with yellow pealike flowers, commonly cultivated as a dye plant throughout the Tropics. Said to be a native of tropical America. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 98.*)

46249 to 46259.¹

From Sao Paulo, Brazil. Presented by Mr. Robert L. Keiser, American consul. Received May 25, 1918.

¹ See footnote on page 19.

46249 to 46259—Continued.

- 46249 to 46258. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.
 46249. *Branco.* 46254. *Manteiga.*
 46250. *Canario.* 46255. *Mulatinho.*
 46251. *Cavallo branco.* 46256. *Preto.*
 46252. *Cavallo marrão.* 46257. *Riscado.*
 46253. *Cavallo mulatinho.* 46258. *Roxo.*
 46259. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.
Frade.

46260 to 46281.¹

From Rio de Janeiro, Brazil. Presented by Mr. R. P. Momsen, American vice consul, who obtained them from the Pan-America Hide Co. Received June 13, 1918.

46260. *DOLICHOS LABLAB* L. Fabaceæ. Bonavist bean.
Mangalo.
 46261. *PHASEOLUS CALCARATUS* Roxb. Fabaceæ. Rice bean.
Anão de China.
 46262. *PHASEOLUS COCCINEUS* L. Fabaceæ. Scarlet Runner bean.
De trepar da Hespanha.
 46263 to 46280. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.
 46263. *Anão amarello.* 46273. *De trepar branco sem flamento.*
 46264. *De segar preto.*
 46265. *Anão flageolet* (green). 46274. *De trepar mont odor.*
 46266. *Anão flageolet.* 46275. *Mulatinho.*
 46267. *De trepar manteiga preto.* 46276. *Manteiga.*
 46268. *De trepar anao grande.* 46277. *Branco.*
 46269. *Manteiga amarello.* 46278. *Preto.*
 46270. *Anão cavallos.* 46279. *De trepar mangestant.*
 46271. *De trepar D. Carlos.* 46280. *Anão flageolet* (marron).
 46272. *De trepar marmoreado.*
 46281. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.
Chicote nojens grandes.

46282 to 46293. *ZEA MAYS* L. Poaceæ. Corn.

From Panama. Presented by Mr. A. H. Verrill. Received June 18, 1918.

"While in the unexplored portion of the Darien district in Panama, I found the 'wild' Indians of the 'forbidden' country raising a number of interesting varieties of corn. These are all 'fixed' among the Indians and come true to seed, and several are used as sweet corn. These Indians consider corn as sacred and use great care in keeping the various kinds separate."

46282. Brown. 46288. Round, light orange.
 46283. White, purple spotted. 46289. Pure white.
 46284. Yellow. 46290. White, red striped.
 46285. Deep orange. 46291. Pink.
 46286. Deep red. 46292. Yellow and red barred.
 46287. Black. 46293. Freckled, brown.

¹ See footnote on page 19.

46294. MERRILLIA CALOXYLON (Ridley) Swingle. Rutaceæ.*(Murraya caloxylon Ridley.)***Katinga.**

From Manila, Philippine Islands. Presented by Mr. E. D. Merrill. Received June 25, 1918.

"A short time ago I received two fruits of this species from Mr. Burkill in Singapore. I am sending you seeds from one of these fruits and I trust that they may reach you in a viable condition." (*Merrill.*)

A medium-sized tree with pale flaky bark, native to Siam. The compound leaves are made up of 13 oblanceolate leaflets on a winged rachis. The pale yellowish green flowers are followed by yellow citronlike fruits, 4 inches in diameter, with a thick skin and green, tasteless flesh. The tree is known as the *katinga* and is famous in the Malay region for its beautiful wood, which is of a light-yellow color with dark-brown streaks. It is fairly hard and takes a good polish. (Adapted from the *Journal of the States Branch, Royal Asiatic Society*, vol. 50, p. 113.)

46295. ELEUSINE CORACANA (L.) Gaertn. Poaceæ. Ragi millet.

From Beira, Mozambique. Presented by Mr. William Humphreys, acting director of agriculture. Received June 25, 1918.

"Ragi millet is the only variety grown in this territory. It is grown only by natives for food purposes and, with the exception of pearl millet (*Pennisetum glaucum*), is practically the only millet grown here." (*Humphreys.*)

46296. CHENOPODIUM AMBROSIODES L. Chenopodiaceæ.

From Rio Grande, Brazil. Purchased from Mr. Samuel T. Lee, American consul. Received June 28, 1918.

Known in Brazil as "herva de Santa Maria" or "Mastruz." A viscid-glandular, rank-smelling, perennial herb, native to tropical America, but widely naturalized and growing abundantly in North America, especially in the eastern United States, as a coarse weed of the roadside and waste places. Its medicinal importance is due to the volatile oil which it contains. A very active anthelmintic is obtained when the bruised fruit or the expressed juice of the plant is used. It is frequently employed for the expulsion of lumbricoid worms, especially in children. (Adapted from *The National Dispensatory*, p. 402.)

See S. P. I. No. 45610 for previous introduction.

46297. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. Oil palm.

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Division of Plant Breeding, Department of Agriculture. Received June 28, 1918.

"We received this variety from the Belgian Kongo in 1914 under the name of *Nsombo B*. The imported seeds were taken from one seed bearer. The plants grown from these seeds were planted in May, 1915, on a rubber estate, where no other oil palms were near, so that they could only fertilize each other. They are now commencing to bear fruit. We can not yet determine the value of the new variety from a commercial point of view." (*Cramer.*)

46298. CAREX PENDULA Huds. Cyperaceæ. Sedge.*(C. maxima Scop.)*

Grown at the Plant Introduction Field Station, Chico, Calif., from seed received from Dr. A. Robertson Proschowsky, Nice, France. Numbered for convenience in recording distribution.

"This is an evergreen plant and an interesting one. It has very attractive deep-green leaves 1 to 2 feet long and 1½ to 2 inches wide." (*Proschowsky*.)

46299. ALECTRYON SUBCINEREUM (A. Gray) Radlk. Sapindaceæ.
(*Nephelium leiocarpum* F. Muell.)

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received June 28, 1918.

"Seeds from a young tree in my garden. It is the first time this species has flowered. The seeds are surrounded by a juicy, red-colored aril which is edible and of a pleasant sweet taste, only it is very small. If my young tree should flower again and produce seed, I shall, of course, be pleased to send more. It is an ornamental plant, like so many tropical evergreens, and absolutely hardy here. As I stated in my former letter, it may serve eventually as stock on which to graft *Nephelium longanum* or *Litchi chinensis*." (*Proschowsky*.)

For previous introduction, see S. P. I. No. 44520.

46300. ATTALEA sp. Phœnicaceæ. **Coquito palm.**

From the City of Mexico, Mexico. Presented by Mr. A. L. Herrera. Received June 5, 1918.

"An undescribed species, closely related to the cohune or corozo palm (*Attalea cohune*) of the Caribbean coast region of Central America; it differs from the cohune palm in the smaller and more rounded fruits and the thinner and more brittle shell of the seed. The seed contains a single kernel, smaller than that of the cohune palm. The kernels contain a high percentage of oil, said to be the equal of coconut oil, and suitable for the manufacture of similar products. The palm is said to grow in great abundance in the vicinity of Mazatlan, Sinoloa. The kernels are exported in considerable quantities from Mazatlan to Pacific ports of the United States for oil extraction." (*C. B. Doyle*.)

46301. ACROCOMIA TOTAI Mart. Phœnicaceæ. **Palm.**

From Asuncion, Paraguay. Presented by Mr. Henry H. Balch, American consul. Received June 19, 1918.

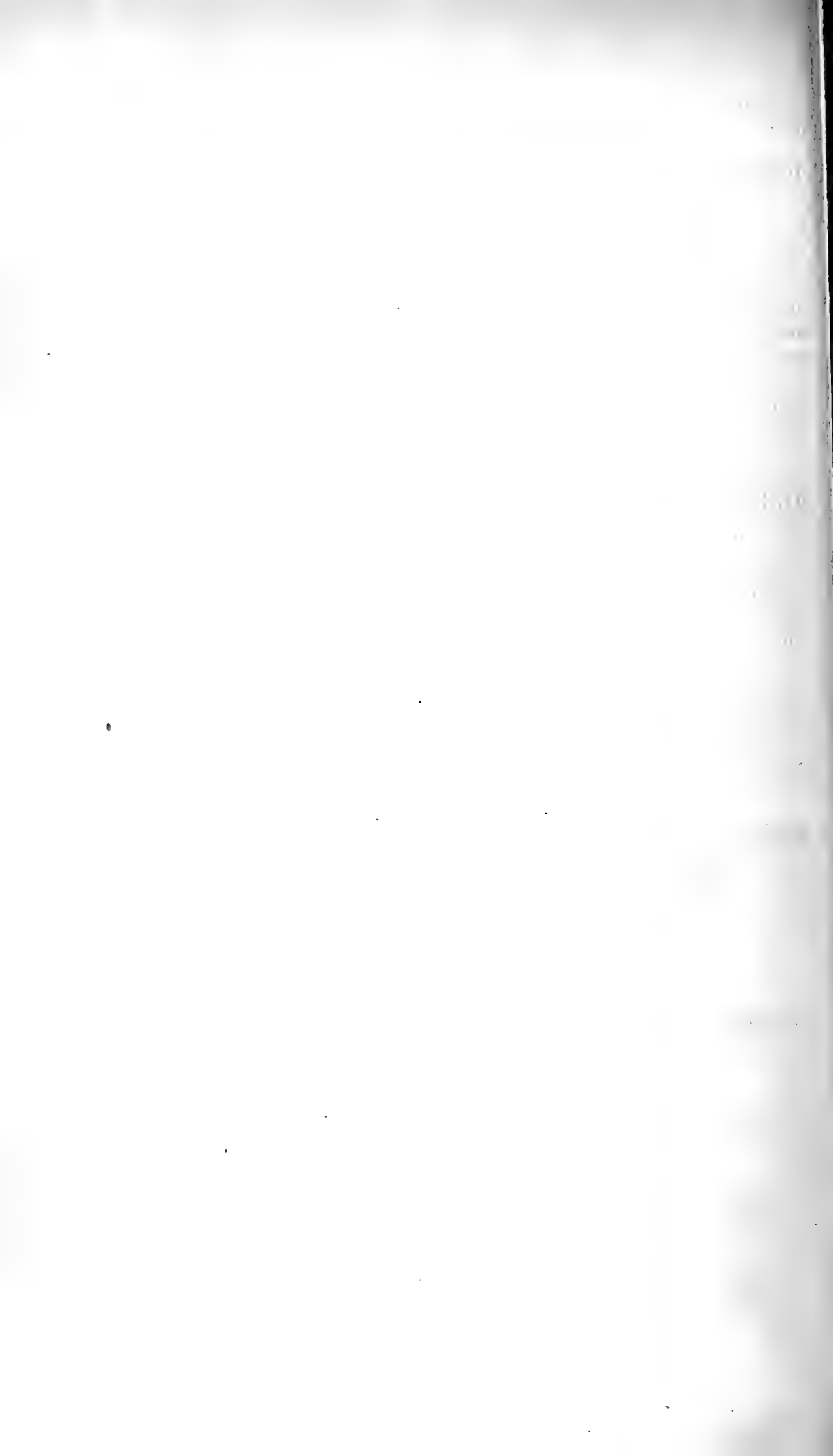
A small palm, rarely over 1 meter (39 inches) in height, with fruit clustered at the base.

For previous introduction, see S. P. I. No. 45483.

46302. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor-bean.**

From Asuncion, Paraguay. Presented by Mr. Henry H. Balch, American consul. Received June 19, 1918.

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Issued May 5, 1923

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JULY 1
TO SEPTEMBER 30, 1918.

(No. 56; Nos. 46303 to 46587.)



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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT IN- TRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1918 (NO. 56; NOS. 46303 TO 46587).

INTRODUCTORY STATEMENT.

Although this inventory is a small one and falls within the period affected by the war, it describes an unusual number of interesting plant immigrants, which, if they succeed, can scarcely fail to make a lasting impression on our horticulture.

No. 46310 (*Amaranthus paniculatus*) is the "huauhtli" of the Aztecs, an amaranth whose seeds are used in the making of a delicate sweetmeat resembling pop-corn balls. This "huauhtli" was cultivated by the Aztecs before the discovery of America. It figured in their religious ceremonies and their commerce. Quantities of this "grain" were exacted by them as tribute from conquered tribes. Dr. Safford has found that Montezuma had 18 granaries, each with a capacity of 9,000 bushels, filled with its seeds. The flour, made into small cakes called *alegría* by the Spaniards, was eaten in large quantities by the lower classes. The ability of this plant to grow and bear in regions too dry for corn makes it worthy of close study.

Some one in the Southwest should experiment with the "huauhtzontli" (*Chenopodium nuttalliae*; No. 46311) and determine whether its delicate inflorescences when cooked as the Mexicans cook them are not worth putting on our menu. A new vegetable such as this should be most interesting for experiment.

Canna edulis (No. 46313), the edible canna or Queensland arrowroot, has been grown for years for arrowroot production in Queensland, because there it yields heavily and is easier to cultivate than the Bermuda arrowroot (*Maranta arundinacea*). Few root vegetables are more brilliantly colored than the tubers of this canna, and its behavior in Florida makes it worthy of special study as a possible crop in the Everglades.

In Nos. 46316 to 46320 we have a collection of strikingly ornamental trees and shrubs from New Zealand, sent in by our correspondent, Mr. H. R. Wright. *Freycinetia banksii* (No. 46317) with its striking fruit, *Meryta sinclairii* (No. 46318) with its immense leaves, *Pittosporum ralphii* (No. 46319) with bell-shaped, dark-crimson flowers, and *Sideroxylon costatum* (No. 46320), a handsome shade tree, should all find a place somewhere in America.

Mr. John Gossweiler has sent in from Loanda, Angola, a species of *Solanum* (*S. macrocarpon*; No. 46330) bearing fruits the size of an apple, and also a brilliant violet-purple flowered species of sesame (*Sesamum angolense*; No. 46332) that may possibly be used to advantage in the improvement of the oil-producing sesame, which has the defect of scattering its seeds, thus making mechanical harvesting impossible.

A red-fleshed pummelo (*Citrus grandis*; No. 46336) from Shenchowfu, which its sender, Mr. N. T. Johnson, says ripens two months earlier than other varieties, may prove valuable in Florida.

The collections of beans and closely allied plants, accessioned in this inventory, may be cited to show how the machinery of plant introduction works when a plant breeder wants to get together as many varieties of a certain plant as possible for experimental purposes. Nos. 46338 to 46354, from Guayaquil, Ecuador; Nos. 46358 to 46373, from Caracas, Venezuela; Nos. 46490 to 46499, from Rosario, Argentina; Nos. 46502 to 46521, from Para, Brazil; and Nos. 46525 to 46530, from Punta Arenas, Chile, will put in his hands a total of 63 probable strains, including, of course, some duplicates.

Whether or not there would be any distinct advantages to truck growers in grafting eggplants on the root of the susumber (*Solanum mammosum*), which is closely related to it, remains to be shown. The idea is interesting, and seeds of the tree have been obtained (No. 46374).

The white sapote, which is much hardier than the avocado, is gradually winning adherents, at least the large-fruited varieties of it. A new one from Guadalajara (*Casimiroa edulis*; No. 46375), with pear-shaped fruits, is welcome, and Mr. Furnivall may have sent a sort superior to any we now have.

The large-fruited Mexican oaks (*Quercus* sp.; No. 46383) are so strikingly interesting that it is to be hoped they will withstand our winters in the South and, like *Lithocarpus cornea* from Hongkong, will find a congenial home along the Gulf coast.

Could the kauri pine (*Dammara australis*; No. 46387), stateliest of all the giant forest trees of the world because of its perfectly columnar trunk, be grown anywhere in the western hemisphere, it ought to be, for disquieting stories of its threatened extinction in New Zealand are rife. We are protecting our redwoods and sequoias, and

it is to be presumed, of course, that New Zealand, too, will safeguard her wonderful trees from extinction.

It is so seldom that a tree from Madagascar comes to this country that the arrival of the *Aphloia* (*A. theaeformis*; No. 46389) is worthy of special mention. This is said to be a low tree found on mountain slopes and when in fruit it is covered with small white wholesome berries.

Nos. 46390 to 46456 record as names only a collection of seeds found by the American consul in Explorer Frank N. Meyer's baggage which was taken off the steamer in China from which he disappeared. No descriptions were attached, and it is evident he had planned to write these up when he reached a region more congenial than was Ichang, from which he had just escaped.

The perennial vetch (*Swainsona* sp.; No. 46457) sent in by Mr. Hamilton, which thrives in porous soils in semitropical regions and holds its own among the native grasses, will attract at once the attention of citrus growers as a promising cover crop for Florida orchards.

Macadamia youngiana (No. 46463), with thin-shelled nuts, if it grows as well in Florida and Hawaii as its relative *M. ternifolia*, will be a valuable nut tree for the Subtropics. The behavior of the macadamia in southern Florida has already begun to attract the attention of nut growers.

South African shrubs grow so well in southern Florida that the introduction of a new sweet-scented one (*Brabejum stellatifolium*; No. 46474), which also has edible fruits, is worthy of emphasis.

A citrus fruit which has a concentrated peach flavor might be useful in the ice-cream business. The bel fruit of India (*Belou marmelos*; Nos. 46477 and 46500) has enthusiastic admirers and may be worthy of serious study by our citrus growers.

Plants whose leaves or fruits are powerful fish poisons have been used by the natives of many countries. They always have an interest in that they may contain valuable new alkaloids. Mr. John Ogilvie has sent in five (Nos. 46482 to 46486) from British Guiana, three of which are still undetermined.

The search for a blight-proof pear has interested many people, and when eight trees of a different habit from the rest remain unattacked by the disease in a badly blighted orchard in Louisiana their bud wood should be tested further to find out whether the variety remains free from blight (*Pyrus communis* \times *serotina*; No. 46566).

The fact that the "yang mei," a most attractive Chinese fruit tree, has fruited at Del Monte and that young trees of it are established at Chico, Calif., and at Brooksville, Fla., make worthy of mention the introduction by Mr. Groff of this species (*Myrica rubra*; No. 46571) from Canton. Though it is a discouragingly slow grower,

the beauty of its fruits is so great that some enthusiast ought to devote his spare time for a score of years to its dissemination.

The neem tree of India (*Azadirachta indica*; No. 46573), which Mr. Lane sends, is related to the Chinaberry tree, but bears dark-purple fruits. It should interest foresters if it grows anything like as fast as its relative, for its wood is reported to resemble mahogany. Its fruits furnish a medicinal oil and its sap is made into a cooling drink.

The New Zealand rimu (*Dacrydium cupressinum*; No. 46575), seeds of which Mr. Wright sends from Auckland, must be a most striking conifer, resembling, it would seem, a drooping yew, with beautiful red-cupped berries.

Nos. 46576 to 46586 describe eleven named varieties of oriental pears (*Pyrus* spp.) which were personally selected by Prof. F. C. Reimer, the pear expert of the Oregon Agricultural Experiment Station, during his recent exploration of eastern Asia. Should pear-blight ever stop the profitable culture of the European pear in America, these oriental varieties and the hybrids between them and the European forms would probably take their place. They are, therefore, of great interest and deserve the widest trial over the country.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels, while the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Miss Esther A. Celander.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION.

Washington, D. C., September 26, 1921.

INVENTORY.¹

46303. PAPAVER SOMNIFERUM L. Papaveraceæ. Poppy.

From Calcutta, India. Purchased from Mr. James A. Smith, American consul general. Received July 1, 1918.

"Seed of last season's crop from the economic botanist to the Government of India at Cawnpore. It is the best seed he could procure at this season of the year and is viable, but it is not pure and contains a mixture of United Provinces poppies." (*Smith.*)

Introduced for the experiments of the Office of Drug-Plant and Poisonous-Plant Investigations and not for general distribution.

46304 and 46305.

From Concepcion, Paraguay. Presented by Mr. Thomas R. Gwynn. Received July 1, 1918. Quoted notes by Mr. Gwynn.

46304. PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.

"The Linconia butter bean is the very finest that I have ever come across. It yields in full blast for at least eight months and with a good season will give, in a climate like this, a year or more in superabundance continually, day after day. The plant is extraordinarily hardy and thrifty, as neither the extreme drought nor the hard frosts of last year put it out of business. When I pulled the plants on September 1 they were still bearing (not a great deal). I planted this year on September 15, and as we had a splendid year the plants are extra fine and are loaded with fruit of all sizes and flowers to the very tip ends. I have them planted along a wire fence with poles 12 feet high stuck in about 1 yard apart."

46305. PISUM SATIVUM L. Fabaceæ. Garden pea.

"Peas that are ready for the table inside of two months and are still bearing and in flower—now something over six weeks."

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by this office, and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases undoubtedly be changed by the specialists interested in the various groups of plants, and the forms of the names will be brought into harmony with recognized American codes of nomenclature.

46306. GARCINIA MANGOSTANA L. Clusiaceæ. Mangosteen.

From Buitenzorg, Java. Presented by the Department of Agriculture.
Received July 3, 1918.

For previous introduction and description, see S. P. I. No. 46204.

46307. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.

From Carora, Venezuela. Presented by Mr. Julio Marmol Herrera. Received July 3, 1918.

Medium-sized, light-gray seed with reddish brown mottlings.

46308 and 46309. CHENOPODIUM AMBROSIOIDES L. Chenopodiaceæ.

From Buitenzorg, Java. Presented by the Botanic Garden. Received July 3, 1918.

The plant is an annual, but has an almost woody stem from 1 to 2 meters in height with alternate lanceolate leaves. The inflorescence consists of simple leafy spikes of very small greenish flowers. The seeds are very small and black. The whole plant has a pronounced aromatic odor. An infusion of this plant has been used in Europe with good results as a cure for nervous affections. (Adapted from the *Pharmaceutical Journal and Transactions*, 3d ser., vol. 9, p. 713.)

For previous introduction, see S. P. I. No. 45524.

46308. From Botanic Garden. 46309. From Kwala Lampur.

46310 and 46311.

From Coyacan, Mexico. Presented by Mrs. Zelia Nuttall. Received July 3, 1918.

46310. AMARANTHUS PANICULATUS L. Amaranthaceæ. Huauhtli.

"Seeds of *Amaranthus paniculatus*, known as 'alegría.' Much used by Mexican Indians for making sweetmeats. They are first roasted, then mixed with sirup made of honey or of sugar and water, rolled into balls, and eaten like sugared pop corn." (Nuttall.)

An annual, with entire leaves, bearing the abundant grainlike edible seed in dense panicles. Some plants produce white seeds and some produce black. The white seeds are those chiefly used by the natives. This plant is found both in cultivation and growing wild. The seeds are ground and cooked in the form of small cakes known as *alegría*, these cakes being eaten in large quantities by the poorer classes, especially during a time of scarcity of corn. *Huauhtli* was cultivated by the Aztecs before the discovery of America. It occupied an important place in the fare of the people, and accounts show that every year 18 granaries, each with a capacity of 9,000 bushels, were filled by Montezuma. Often the tribute exacted by the Aztecs from the people they conquered would take the form of a certain quantity of this grain. It was so closely connected with the life of the people that it figured in religious observances. Spanish historians, writing in the first half of the seventeenth century, give accounts of how the ancient Mexicans made figures of their gods out of the flour obtained from the seed. The figures were carried in processions, and at the end of the ceremony they were broken up and served to the people as a form of communion. (Adapted from Safford, *A Forgotten Cereal of Ancient America, Proceedings of the Nineteenth International Congress of Americanists*, p. 286, 1917.)

46310 to 46311—Continued.**Huauhtzontli.****46311. CHENOPODIUM NUTTALLIAE** Safford. Chenopodiaceæ.

"Seeds of 'huauhtzontli,' the unripe inflorescence of which is a favorite vegetable of the Mexican Indians. It is boiled or fried in butter, stem and all, small flowering tips being selected and tied together. Much used in Lent. Is very nourishing and palatable. The seeds must be soaked in milk (like corn, half ripe)." (*Nuttall*.)

"Native name *jochihuaauhtli* (flowering huauhtli). A plant cultivated near the City of Mexico for the sake of its prolific branching inflorescences, which are gathered before they are quite mature and while the seeds are still soft and cooked as a vegetable with other ingredients. This variety, with yellowish or pale-brown discoid seeds, is the most popular. The inflorescences are known by the Aztec name *huauhtzontli*, signifying 'huauhtli-heads.' Botanically, the plant is closely allied to *Chenopodium paganum* Reichenb. and *C. album* L. It is quite distinct from *C. quinoa* Willd., the celebrated food staple of the Peruvian highlands; and it must not be confused with the plant called *michihuaauhtli* (fish-egg huauhtli), which is a white-seeded *Amaranthus*, not a *Chenopodium*." (*W. E. Safford*.)

46312. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

From Vereeniging, South Africa. Presented by Mr. J. Burt Davy. Received August 14, 1918.

A small lot of mixed varieties of cowpeas introduced for experimental purposes.

46313. CANNA EDULIS Ker. Cannaceæ. Edible canna.

From Honolulu, Hawaii. Tubers presented by Mr. J. M. Westgate, Hawaii Agricultural Experiment Station. Received July 9, 1918.

In Queensland the edible canna, or "Queensland arrowroot," as it is called there, has been cultivated for years because its heavy yields and easy cultivation have made it more profitable than the Bermuda arrowroot, *Maranta arundinacea*. The stems and leaves are used for forage, and the tuber makes a palatable vegetable when cooked, somewhat resembling the turnip.

46314. ZEA MAYS L. Poaceæ. Corn.

From Guadalajara, Mexico. Presented by Arnulfo Ballesteros, La Barca, Jalisco, Mexico, at the request of Mr. John R. Silliman, American consul. Received July 10, 1918.

"Early Pipitillo corn which is cultivated in the swampy lands of Chapala. This corn is early in this region only when sown in the months of January, February, and the early part of March. It is then possible for the harvesting and drying to be completed four months afterward. Sown in May or June, the time required for it to mature is six months." (*Ballesteros*.)

46315. PAPAVER SOMNIFERUM L. Papaveraceæ. Poppy.

From Yokohama, Japan. Presented by the Yokohama Nursery Co. Received July 10, 1918.

"Variety *album*. An erect annual with handsome white flowers, which is cultivated in the Orient for opium manufacture. It was introduced into the

United States for the use of its palatable seeds in confectionery and the preparation of morphia for medicinal purposes. The seeds yield a comestible oil. It is of comparatively easy culture." (*S. C. Stuntz.*)

46316 to 46320.

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received July 12, 1918.

46316. CLIANTHUS PUNICEUS (Don) Soland. Fabaceæ. Parrot's-bill.

A white-flowered form of the *kowhai*, which in its scarlet-flowered form is one of the most gorgeous of New Zealand flowering plants. With its flowers 2 inches in length in long pendulous racemes and its heavy, dark-green, glossy, pinnate leaves, it should prove a desirable addition to the drooping shrubs suitable for growing in regions having but slight frosts. The flowers of this plant in its native haunts are said to be pollinated by birds. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 210.)

For previous introduction, see S. P. I. No. 34716.

46317. FREYCINETIA BANKSII A. Cunn. Pandanaceæ.

"The fruit proper does not ripen until many months after the ripening of the white bracts. In size and shape it is almost identical with the *Monstera deliciosa*." (*Wright.*)

A vine which climbs to the tops of the tallest trees along the banks of rivers in the North Island of New Zealand. The linear-lanceolate leaves are borne in clusters along the stem, and the flowers appear in the center of these leaf clusters. It is called *Lon marrar* by the natives, who eat the white fleshy bracts of the flowers for their sugary juice. (Adapted from *Hooker, Companion to the Botanical Magazine*, vol. 2, p. 377.)

46318. MERYTA SINCLAIRII (Hook. f.) Seem. Araliaceæ.

"It makes a beautiful tree with immense leaves; an ideal specimen for a lawn, but very tender to frost." (*Wright.*)

A handsome New Zealand tree, 12 to 24 feet high, with glossy leaves 20 inches long and 10 inches wide. The erect panicles of greenish yellow flowers are followed by oblong, shining black fruits. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 312.)

46319. PITTOSPORUM RALPHII Kirk. Pittosporaceæ.

A laxly branched shrub 15 to 20 feet high, found in the central district of the North Island of New Zealand. The shoots, sepals, and under-surface of the coriaceous leaves are covered with close white hairs. The fascicles of small, bell-shaped, dark-crimson flowers, with protruding yellow anthers resting on the downy white young leaves, make it a very attractive ornamental shrub. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 195.)

46320. SIDERONYLON COSTATUM (Endl.) F. Muell. Sapotaceæ.

A handsome, closely branched tree 40 feet high and 3 feet in diameter, native to the coasts of the North Island and of Norfalls Island in New Zealand. The obovate, entire leaves, 2 to 4 inches long, are coriaceous and shining. The flowers are found one or two together in the axils of the leaves and the fruits are 1 inch in diameter with one to four seeds. The wood is hard, white, and durable, and the bony seeds were formerly used for necklaces. (Adapted from *Cheeseman, Manual of the New Zealand Flora*, p. 435.)

46321. CARICA sp. Papayaceæ.

From Tampico, Mexico. Presented by Mr. Harry Hummel. Received July 13, 1918.

"*Papaya broncha*. This is the everblooming papaya; it produces a fruit about 3 inches long and 2 inches in diameter. The trees grow wild in the woods, can be transplanted at any time of the year, require no attention except water, and I believe if cultivated will produce a larger fruit." (*Hummel*.)

46322 to 46328.

From Rio Grande, Brazil. Obtained by Mr. Samuel T. Lee, American consul. Received July 13, 1918.

These legumes have been introduced for use in a series of experiments in testing and breeding varieties of South American beanlike plants, for the purpose of selecting or developing strains suited to the various conditions obtaining in different parts of the United States.

46322 to 46326. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

46322. *Feijão carico.* **46325.** *Feijão da praia.*

46323. *Feijão tupi.* **46326.** *Feijão preto.*

46324. *Feijão branco.*

46327 and 46328. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

46327. *Feijão mindo branco.* **46328.** *Feijão mindo oscuro.*

46329 to 46332.

From Loanda, Angola, Africa. Presented by Mr. John Gossweiler, Department of Agriculture. Received July 16, 1918.

46329. RAPHIA GAERTNERI Mann and Wendl. Phœnicaceæ.

A tropical African palm with a simple erect stem and a crown of pinnately compound leaves made up of linear-lanceolate, acuminate segments with the margins recurved at the base. The scaly chestnut-brown fruits, 2 to 3 inches long, are borne in pendent clusters. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 8, p. 105.*)

46330. SOLANUM MACROCARPON L. Solanaceæ.

A stout undershrub with a much-branched smooth stem and ovate, sinuate-margined leaves 8 inches long. The racemose cymes, opposite the leaves, bear blue-purple flowers, 1 to 2 inches broad, which are followed by globose, yellow fruits the size of an apple. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 4, sec. 2, p. 214.*)

46331. GLADIOLUS sp. Iridaceæ. Gladiolus.

Received without description.

46332. SESAMUM ANGOLENSE Welw. Pedaliaceæ.

An erect herb, often 8 feet high, native to tropical Africa. The square stems are clothed with numerous oblong to ovate wavy margined leaves 2 to 4 inches long. The solitary, axillary flowers have brilliant violet-purple, obliquely campanulate corollas, 2 to 3 inches long. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 4, sec. 2, p. 555.*)

46333. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.

From Colombia. Presented by Mr. Hernando Villa. Girardot. Received July 16, 1918.

Seed five-eighths of an inch long and three-eighths of an inch wide; light-gray ground with stripes and blotches of reddish brown. Introduced for experiments to determine the oil content of different varieties of castor-beans.

46334. CARICA PAPAYA L. Papayaceæ. Papaya.

From Tampico, Mexico. Presented by Mr. Harry Hummel. Received July 16, 1918.

"*Papaya real*. The fruit from which these seeds were taken was 14 inches long and 6 inches in diameter. It is the very best papaya that grows in the Tampico district and is a delicious fruit equal to any muskmelon. The trees grow in sandy loam in a climate which very seldom goes below 40° F. and reaches as high as 110°." (*Hummel*.)

46335. VIROLA sp. Myristicaceæ.

From Rio de Janeiro, Brazil. Presented by Mr. R. P. Momsen. American vice consul. Received July 17, 1918.

"*Bicuhyba* nut. A common ornamental and timber tree of large size, with brown, medium-hard wood, well known on the Brazilian market. The seed is said to yield an oil used in medicine and for soap making." (*H. M. Curran*.)

For previous introduction, see S. P. I. No. 41945.

46336. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. Pummelo.
(*C. decumana* Murray.)

From Shenchowfu, Hunan, China. Presented by Mr. N. T. Johnson, American consul at Changsha, who received them from Rev. J. F. Bucher. Received July 24, 1918.

"Red-fleshed pummelo. Ripens earliest of any pummelos on our compound. Is at least two months earlier than other varieties." (*Bucher*.)

46337. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

Plants grown at the Plant Introduction Field Station, Miami, Fla. Numbered for convenience in recording distribution.

Gottfried variety. A Mexican avocado which has proved quite frost resistant. This variety is a seedling grown from seed received under S. P. I. No. 19094. The fruit ripens at Miami during the months of August, September, and October. It is pear shaped and of a purplish maroon color; weighs 11 to 12 ounces and is of fair quality.

46338 to 46354.

From Guayaquil, Ecuador. Presented by Dr. Frederic W. Goding, American consul general. Received July 24, 1918. Descriptive notes by Dr. Goding.

These legumes have been introduced for use in a series of experiments in testing and breeding varieties of South American plants which bear beanlike seeds, for the purpose of selecting or developing strains suited to the various conditions obtaining in different parts of the United States.

46338 to 46354—Continued.

46338. LENTILLA LENS (L.) W. F. Wight. Fabaceæ. **Lentil.**
(*Lens esculenta* Moench.)

"Peas, Lentejas."

46339. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"Beans, Pallares."

46340 to 46351. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

46340. "*Bayo*." **46346.** "*Misturiado*."

46341. "*Burro*." **46347.** "*Panamito reforzado*."

46342. "*Panamito*." **46348.** "*Burro amarillo*."

46343. "*Canario*." **46349.** "*Caballero*."

46344. "*Criollo*." **46350.** "*Chalos*."

46345. "*Overo*." **46351.** "*Cacique*."

46352. PISUM SATIVUM L. Fabaceæ. **Garden pea.**

"*Alberjas*."

46353. VICIA FABA L. Fabaceæ. **Broad bean.**

"*Habas*."

46354. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"*Fumbes*."

46355 to 46357.

From Richmond, Australia. Presented by Mr. F. H. Baker. Received July 24, 1918.

46355. ACACIA DIFFUSA Lindl. Mimosaceæ. *

A straggling shrub, native to New South Wales, with loosely scattered sessile, linear leaves about an inch long and yellow flowers in axillary heads about the size of a pea. (Adapted from *The Botanical Register*, vol. 8, pl. 634.) *

For previous introduction, see S. P. I. No. 44320.

46356. ACACIA JUNIPERINA Willd. Mimosaceæ. **Prickly wattle.**

"The common prickly wattle of the coastal and mountain districts. A prickly scrambling shrub, usually with white or cream-colored flowers. Very common in New South Wales." (*Maiden, Wattles and Wattlebarks*, 3d ed., p. 77.)

46357. HAKEA ROSTRATA F. Muell. Proteaceæ.

An erect shrub several feet in height with glabrous branches. The terete leaves are smooth and rigid. The flowers are borne in sessile axillary clusters. The rugose fruit is 1 to 2 inches long by three-fourths of an inch broad, recurved at the base, incurved from the middle, with a closely inflexed conical beak. Found in Victoria and southern Australia. (Adapted from *Bentham, Flora Australiensis*, vol. 5, p. 508.)

For previous introduction, see S. P. I. No. 45868.

46358 to 46373.

From Caracas, Venezuela. Presented by Mr. H. Pittier, through Mr. Homer Brett, American consul, La Guaira. Received July 24, 1918. Quoted notes by Mr. Pittier.

These legumes have been introduced for use in a series of experiments in testing and breeding varieties of South American plants which bear beanlike

seeds, for the purpose of selecting or developing strains suited to the various conditions obtaining in different parts of the United States.

46358. *DOLICHOS LABLAB* L. Fabaceæ. **Bonavist bean.**
 "No. 14. *Frijol tapiruense*."

46359 to 46361. *PHASEOLUS LUNATUS* L. Fabaceæ. **Lima bean.**
 46359. "No. 9. *Guaracaro blanco*."
 46360. "No. 11. *Guaracaro cafe con leche*."
 46361. "No. 15. *Guaracaro peine*."

46362 to 46370. *PHASEOLUS VULGARIS* L. Fabaceæ. **Common bean.**
 46362. "No. 7. *Poncha rosada*."
 46363. "No. 6. *Caraota blanca*."
 46364. "No. 5. *Huevo de paloma*."
 46365. "No. 3. *Guaracaro redondo pintado*."
 46366. "No. 8. *Caraota negra*."
 46367. "No. 16. *Poncha rosada jaspeada*."
 46368. "No. 1. *Guacamaya*."
 46369. "No. 13. *Caraota indiecita pequena*."
 46370. "No. 12. *Guaracaro colorado*."

46371 to 46373. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. **Cowpea.**
 46371. "No. 10. *Frijol colorado*."
 46372. "No. 2. *Frijol blanco de sopa*."
 46373. "No. 4. *Frijol bayo*."

46374. *SOLANUM MAMMOSUM* L. Solanaceæ. **Susumber.**

From Porto Rico. Presented by Prof. C. S. Sargent, Arnold Arboretum, Jamaica Plain, Mass. Collected by Mr. Sylvester Baxter. Received July 25, 1918.

"In Jamaica difficulties in bringing eggplants to a healthy maturity have been met by grafting them on *Solanum mammosum*, the so-called 'susumber tree,' a rank, tropical weed, closely related botanically to the eggplant. The grafts are said to produce fruits of large size and fine flavor, and as the stock is perennial bearing is continual." (*Cook and Collins, Economic Plants of Porto Rico, Contributions from the U. S. National Herbarium, vol. 8, p. 242.*)

For previous introduction, see S. P. I. No. 27713.

46375. *CASIMIROA EDULIS* La Llave. Rutaceæ. **White sapote.**

From Guadalajara, Mexico. Presented by Mr. F. S. Furnivall, through Mr. J. R. Silliman, American consul. Received July 26, 1918.

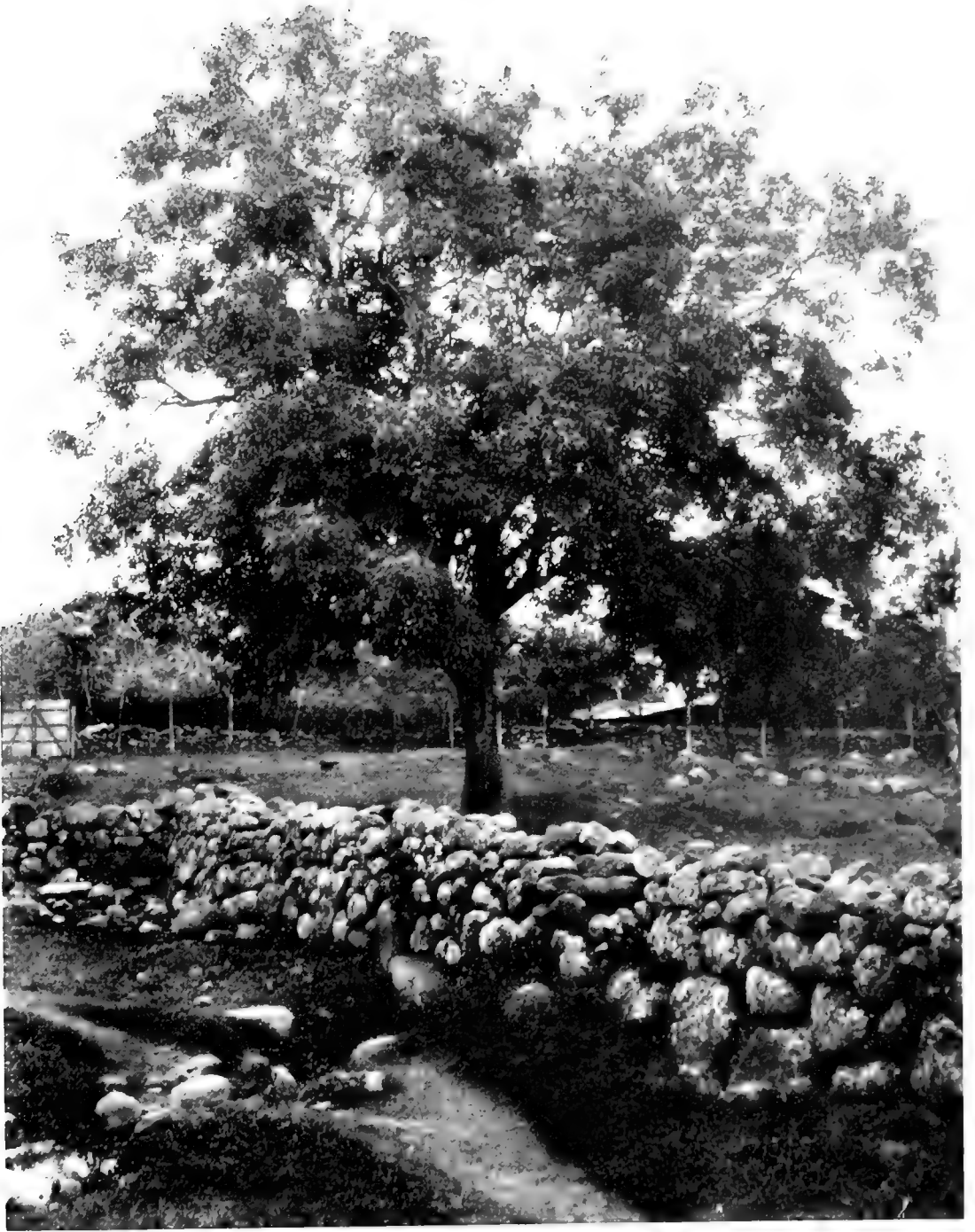
"A pear-shaped variety of the white sapote. The fruits were healthy, of good size, ripe, and of a bright-yellow color." (*Furnivall.*)

For previous introduction and description, see S. P. I. No. 39583.

For an illustration of the white sapote tree, see Plate I.

46376 and 46377. *BAROSMA* spp. Rutaceæ.

From Transvaal, South Africa. Presented by Mr. J. F. Jewell, American consul at Lourenco Marques, Portuguese East Africa, who obtained them from the Director of Agriculture, through the Division of Botany, Transvaal Department of Agriculture, Pretoria. Received July 29, 1918.



THE WHITE SAPOTE, AS IT GROWS IN COSTA RICA. (*CASIMIROA EDULIS*
LA LLAVE, S. P. I. NO. 46375.)

This fruit-bearing tree is commonly cultivated in Mexico and Central America, being particularly esteemed by the inhabitants of Mexico. In recent years it has been grown in California and Florida, where it succeeds admirably. There is much difference among seedling trees in the character of their fruit; that of some is excellent, while that of others is of mawkish or even bitter flavor. Superior varieties are now being propagated by budding or grafting. (Photographed by Wilson Popenoe, Cartago, Costa Rica, May 29, 1920; P17854FS.)



THE CHUCK MEI, AN ORNAMENTAL CHINESE SHRUB FOR THE SOUTH. (LOROPETALUM CHINENSE (R. BR.) OLIVER, S. P. I. No. 46424.)

This small shrub related to the witch-hazel was found by Mr. Meyer growing in rather sterile soil among the rocks and even in open pine forests in Hupeh Province, China. It is called by the Chinese the *chuck mei*. The white flowers, which literally cover the bushes very early in spring, make them look like banks of snow at a distance. There is considerable variation in the whiteness of the flowers, however, ranging from pure white to greenish white. (Photographed by F. N. Meyer, near Miaochien, Hupeh, China, April 14, 1917; P12421 F.S.)

46376 and 46377—Continued.**46376. BAROSMA BETULINA** (Thunb.) Bartl. and Wendl.**Buchu.**

A much-branched shrub with rodlike branches, found on the slopes of the Roodesand Mountains in South Africa. The opposite, cuneate-obovate leaves, about three-fourths of an inch long and half an inch wide, are sharply and closely denticulate on the margin. (Adapted from *Harvey and Sonder, Flora Capensis, vol. 1, p. 393.*)

This and the following species are two of the sources of the buchu leaves used in medicine.

46377. BAROSMA SERRATIFOLIA (Curt.) Willd.**Long-leaf buchu.**

An erect South African shrub with angular twigs bearing linear-lanceolate sharply serrulate leaves $1\frac{1}{2}$ inches long and one-fourth of an inch wide. This species has the same medicinal properties as *B. betulina*, but is said to contain less of the essential oil. (Adapted from *Harvey and Sonder, Flora Capensis, vol. 1, p. 393.*)

46378. CUCURBITA PEPO L. Cucurbitaceæ.**Pumpkin.**

From San Jose, Costa Rica. Presented by Sr. Carlos Volio, through Mr. C. Wercklé. Received July 29, 1918.

Seeds of an exceptionally valuable pumpkin introduced for experimental purposes.

46379 to 46381.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester. Received July 30, 1918. Quoted notes by Mr. Wester.

46379. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ.**Ma-yuen.**

"*Adlay*. An edible variety."

46380. PARKIA TIMORIANA (DC.) Merr. Mimosaceæ.
(*P. roxburghii* Don.)**Cupang.**

A very large tree found in Timor and the Philippines, often 115 feet high, with a widespreading crown. The fernlike, bipinnate leaves are made up of a large number of very small leaflets. The small white and yellow flowers are borne in dense pear-shaped panicles, and the pendulous black pods are 18 inches long. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 5, p. 2474.*)

46381. PHASEOLUS LUNATUS L. Fabaceæ.**Lima bean.**

"The *Lamao* Lima. Given the right conditions this variety is very prolific."

46382. AMPELODESMA BICOLOR (Poir.) Kunth. Poaceæ.**Grass.**

From Algiers, Algeria. Presented by Dr. L. Trabut. Received August 2, 1918.

A bunch grass with long tough leaves of possible use in paper making.

For previous introduction and description, see S. P. I. No. 33654.

46383. QUERCUS sp. Fagaceæ.**Oak.**

From Guatemala. Presented by Mr. E. Reeves, Finca el Tambor, San Felipe, Retalhuleu, at the request of Dr. William Trelease, of the University of Illinois. Received August 8, 1918.

"Fruits of a large-fruited oak that grows a few miles from here, and which Dr. Trelease has done me the honor to [name for me]." (Reeves.)

"I am glad that Mr. Reeves got to you viable seeds of his fine oak, which I thought you would like. It is between *Quercus corrugata* and *Q. cyclobalanoides* in characters, but very distinct from both. The name is a manuscript one as yet." (Trelease.)

46384. PANDOREA AUSTRALIS (R. Br.) Spach. Bignoniaceæ.
(*Tecoma australis* R. Br.)

From Sawtelle, Calif. Presented by Mr. P. D. Barnhart. Received August 10, 1918.

"The most wonderful of all climbing plants grown on this coast. It is a rampant grower with dark, shining green foliage. When in bloom the flowers are as the sands of the sea, so abundant are they. The color is a light cream, spotted with chocolate, and the whole show is over in about two weeks." (Barnhart).

For previous introduction, see S. P. I. No. 44961.

46385. CALYDOREA SPECIOSA (Hook.) Herbert. Iridaceæ.

From Santiago, Chile. Presented by Dr. Carlos Camacho, director, Servicios de Policia Sanitaria Vegetal. Received August 14, 1918.

"Bulbs known in Chile as *lahui*. This plant is not cultivated and is found only in the hills of certain regions in the central and southern parts of the country." (Camacho.)

For previous introductions, see S. P. I. Nos. 30074, 30075, and 36134.

46386. MORINGA OLEIFERA Lam. Moringaceæ. Horse-radish tree.
(*M. pterygosperma* Gaertn.)

From Managua, Nicaragua. Presented by the American Legation. Received August 14, 1918.

"A small tree, cultivated as an ornamental in Cuba, usually about 16 or 20 feet in height, erect, with compound leaves nearly a foot long. The white flowers are borne in panicles, and the slender pods are often a foot long." (Wilson Popenoe.)

For previous introduction, see S. P. I. No. 40913.

46387 and 46388.

From Palmerston North, New Zealand. Presented by Mr. J. W. Poynton. Received July 26, 1918.

46387. DAMMARA AUSTRALIS Lambert. Pinaceæ. Kauri pine.
(*Agathis australis* Steud.)

This magnificent tree, native to New Zealand, sometimes measures 180 feet in height and 17 feet in diameter, the estimated age of such a tree being 700 to 800 years. It furnishes an excellent, straight-grained, remarkably durable timber which is much used in boat building, bridge building, wagon making, and for furniture. This tree also yields the kauri resin, from which an almost colorless varnish is made. (Adapted from Mueller, *Select Extra-Tropical Plants*, 9th ed., p. 161.)

46387 and 46388—Continued.

46388. PHORMIUM TENAX Forst. Liliaceæ.

New Zealand flax.

"The yield is about 1 ton of fiber from 8 tons of green leaves. The nonfibrous part of the leaves, stripped from the fiber, has a lot of proteid material in it and some sugar and starch. Cattle eat the cut-up leaves greedily, and if the waste were dried it would probably make a good cattle feed. When decayed it makes an excellent fertilizer. Analyses have shown a high percentage of potassium salts in the ash."

1. "From plants cut two or three times."
2. "From plants not previously cut."
3. "From plants cut once only." (Poynton.)

46389. APHLOIA THEAEFORMIS (Vahl) Bennett. Flacourtiaceæ.

From Tamatave, Madagascar. Presented by the Envoi de la Station Experimentale d'Agriculture du Gouvernement Ivoloina. Received August 8, 1918.

A low tree found on the slopes of the mountains in Madagascar. The small white berries, which literally cover the tree, are edible and very wholesome, although slightly bitter. The leaves are said to possess medicinal virtues. (Adapted from *Heckel, Plantes Utiles de Madagascar*, p. 256.)

46390 to 46456.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received August 12, 1918.

"This is the last collection of plant material to be made by the late Frank N. Meyer, our agricultural explorer, who was drowned in the Yangtze River on June 1, 1918. The seeds were found in Mr. Meyer's baggage and forwarded from Shanghai by the American consul.

"In view of Mr. Meyer's usual practice of giving a careful description of every seed and plant which he sent in, it seems appropriate to explain that the reason these few last lots received must be published without notes is that Mr. Meyer evidently had not had time since their collection to arrange the notes to go with them. It is with the same sad reluctance which a traveler feels when he leaves his comrade buried somewhere along the route and pushes on that I write these few words regarding Mr. Meyer's last plant introductions into America." (David Fairchild.)

46390. AMERIMNON sp. Fabaceæ.

"Altitude 3,000 feet. Shrub 4 feet tall."

46391. AMYGDALUS DAVIDIANA (Carr.) Zabel. Amygdalaceæ. Peach?
(*Prunus davidiana* Franch.)

46392 and 46393. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

"Chikungshan, Honan, China, August 7, 1917. Wild peaches. Altitude about 2,000 feet."

46394. ARALIA sp. Araliaceæ.

46395. ARALIA sp. Araliaceæ.

46396. ASPARAGUS sp. Convallariaceæ.

Asparagus.

46397. BEGONIA sp. Begoniaceæ.

Begonia.

46398. BERBERIS sp. Berberidaceæ.

Barberry.

46390 to 46456—Continued.

46399. *BRASSICA PEKINENSIS* (Lour.) Gagn. Brassicaceæ. **Pai ts'ai.**
 46400. *BRASSICA PEKINENSIS* (Lour.) Gagu. Brassicaceæ. **Pai ts'ai.**
 "Yo pai ts'ai (oil white vegetable)."
 46401. *BRASSICA* sp. Brassicaceæ.
 "Changyang, Hupeh, December 9, 1917. Ching ts'ai and peh ts'ai mixed."
 46402. *BRASSICA* sp. Brassicaceæ.
 "Ta pai ts'ai."
 46403. *CAPSICUM ANNUUM* L. Solanaceæ. **Pepper.**
 46404. *CARTHAMUS TINCTORIUS* L. Asteraceæ. **Safflower.**
 "Sample of hong hua, red flower seed; plant for coloring silk red."
 46405. *CLEMATIS* sp. Ranunculaceæ. **Clematis.**
 46406. *CORYLUS TIBETICA* Batal. Betulaceæ.
 46407. *COTONEASTER* sp. Malaceæ.
 46408. *COTONEASTER* sp. Malaceæ.
 46409. *COTONEASTER* sp. Malaceæ.
 46410. *COTONEASTER* sp. Malaceæ.
 46411. *CRATAEGUS PINNATIFIDA* Bunge. Malaceæ. **Hawthorn.**
 "From Shinglungshan."
 46412. *CRATAEGUS PINNATIFIDA* Bunge. Malaceæ. **Hawthorn.**
 46413. *CUCUMIS SATIVUS* L. Cucurbitaceæ. **Cucumber.**
 46414. *DIOSPYROS LOTUS* L. Diospyraceæ. **Persimmon.**
 46415. *EREMOCHLOA* sp. Poaceæ. **Grass.**
 46416. *FAGOPYRUM VULGARE* Hill. Polygonaceæ. **Buckwheat.**
 (*F. esculentum* Moench.)
 46417. *JUGLANS MANDSHURICA* Maxim. Juglandaceæ. **Walnut.**
 46418. *KOELREUTERIA* sp. Sapindaceæ.
 46419. *LILIUM* sp. Liliaceæ. **Lily.**
 "Near Suilokua, Hupeh, November 13, 1917. Altitude, 2,000 feet."
 46420. *LILIUM* sp. Liliaceæ. **Lily.**
 "Near Tsayanpoo. Altitude 5,300 feet. December 2, 1917."
 46421. *LILIUM* sp. Liliaceæ. **Lily.**
 46422. *LILIUM* sp. Liliaceæ. **Lily.**
 46423. *LILIUM* sp. Liliaceæ. **Lily.**
 46424. *LOROPETALUM CHINENSE* (R. Br.) Oliver. Hamamelidaceæ.
 For an illustration of this shrub, as photographed by Mr. Meyer, see Plate II.
 46425. *PALIURUS SPINA-CHRISTI* Mill. Rhamnaceæ.
 46426. *PEUCEDANUM* sp. Apiaceæ.
 46427. *PHASEOLUS CALCARATUS* Roxb. Fabaceæ. **Rice bean.**
 "Patung, China, December 5, 1917. *Man doh* (savage bean). Eaten in soups."
 46428. *PHYSALIS ALKEKENGII* L. Solanaceæ. **Alkekengi.**

46390 to 46456—Continued.

46429. *PISUM SATIVUM* L. Fabaceæ. Garden pea.
 "Changyang, Hupeh, December 9, 1917. *Wah doh*. A large variety eaten boiled, steamed, and roasted as human food. A winter crop."
46430. *POUPARTIA AXILLARIS* (Roxb.) King and Prain. Anacardiaceæ..
46431. *PRUNUS* sp. Amygdalaceæ. Plum.
46432. *PRUNUS* sp. Amygdalaceæ. Cherry.
46433. *PTEROCELTIS TATARINOWII* Maxim. Ulmaceæ.
46434. *PYRUS BETULAEFOLIA* Bunge. Malaceæ. Pear.
- 46435 to 46437. *PYRUS CALLERYANA* Decaisne. Malaceæ. Pear.
46435. "Kingmen, Hupeh, October 10, 1917. An intermediate type between the cultivated form and the wild one."
46436. "2453a. Kingmen, Hupeh, October, 1917. *Yeh T'ang li*."
46437. (No descriptive note attached.)
46438. *PYRUS* sp. Malaceæ. Pear.
 "Mixed varieties from various localities."
46439. *QUERCUS* sp. Fagaceæ. Oak.
46440. *RHYNCHOSIA VOLUBILIS* Lour. Fabaceæ.
46441. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean.
46442. *SACCHARUM ARUNDINACEUM* Retz. Poaceæ. Grass
 "Near Hsiaochita, 5 miles northeast of Ichang, Hupeh. A grass growing from 3 to 10 feet tall, found in sandy and pebbly river beds, subject to annual overflow. A most excellent binder of loose sand for Columbia River regions."
46443. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.
 Medium-sized, yellowish green seed.
46444. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.
 Small, flat, black seed.
46445. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.
 Small, round, yellow seed.
46446. *SOPHORA TOMENTOSA* L. Fabaceæ.
46447. *STILLINGIA SEBIFERA* (L.) Michx. Euphorbiaceæ. Tallow tree.
 (*Sapium sebiferum* Roxb.)
46448. *STIZOLOBIUM DEERINGIANUM* Bort. Fabaceæ. Florida velvet bean.
 "For hilly land."
46449. *STIZOLOBIUM NIVEUM* (Roxb.) Kuntze. Fabaceæ. Lyon bean.
46450. *SYMPLOCOS* sp. Symplocaceæ.
46451. *TOONA SINENSIS* (Juss.) Roemer. Meliaceæ.
 (*Cedrela sinensis* Juss.)
46452. *TRACHYCARPUS EXCELSUS* (Thunb.) Wendl. Phœnicaceæ. Palm.
46453. *TRAPA NATANS* L. Trapaceæ. Water-chestnut.
46454. *VIBURNUM* sp. Caprifoliaceæ.
46455. *VIBURNUM* sp. Caprifoliaceæ.
46456. *VITIS* sp. Vitaceæ. ♦ Grape.
 "Tahungshan, August 23, 1917. Altitude, 4,000 feet. Medium-strong growth; leaves very woolly underneath."

46457. SWAINSONA sp. Fabaceæ.

From Tolga, Queensland, Australia. Presented by Mr. J. A. Hamilton.
Received August 14, 1918.

"Seeds of a perennial vetch. The plant seems very drought resistant, as it is green all the time. It holds its own among the native grasses and is green when they are dried up, so it must root very deeply. This ought to prove a valuable fodder crop in semitropical areas, especially in the drier parts. It grows in a very porous, well-drained soil." (*Hamilton.*)

46458 to 46464.

From Burringbar, New South Wales. Presented by Mr. B. Harrison. Received August 16, 1918. Quoted notes by Mr. Harrison.

46458. DIANELLA sp. Liliaceæ.

"A native lily growing on the beach here, with insignificant purple flowers and berries. Stock eat the foliage."

46459. HIBISCUS sp. Malvaceæ.

"A native hibiscus growing on the coast here. Height 10 to 12 feet. Yellow flowers with purple center. Large leathery foliage which is eaten by stock. It requires a few years to grow from seed to flower."

46460. IPOMOEA sp. Convolvulaceæ.

"Native Ipomoea with large purple flowers and handsome lacinated foliage. Would make a good ornamental. A perennial vine with tuberous root."

46461. ISCHAEMUM TRITICEUM R. Br. Poaceæ.

"Giant Ischaemum, growing to the length of several feet."

46462. PANICUM PARVIFLORUM R. Br. Poaceæ.

"Height 3 to 4 feet. A very heavy yielder; nutritious and relished by stock. One of our best native grasses."

46463. MACADAMIA YOUNGIANA F. Muell. Proteaceæ. Macadamia.

"The thin-shelled Queensland nut. Very rare here."

A shrub 8 to 10 feet high with oblong leaves in whorls of three or four and with nuts resembling those of *M. ternifolia*, but with thinner shells. (Adapted from *Bentham, Flora Australiensis, vol. 5, p. 406.*)

46464. NYMPHAEA GIGANTEA Hook. Nymphaeaceæ. Water lily.

"The large, beautiful blue water lily of the northern rivers of New South Wales."

46465 to 46472.

From Rio Grande, Brazil. Presented by Mr. Samuel T. Lee, American consul. Received August 17, 1918. Quoted notes by Mr. Lee.

These legumes have been introduced for use in a series of experiments in testing and breeding plants which bear beanlike seeds, for the purpose of selecting or developing strains suited to the various conditions obtaining in different parts of the United States.

46465 to 46470. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

46465. "*Feijão branco* (white)."

46466. "*Feijão enxofre* (sulphur)."

46467. "*Feijão mulatinho*."

46468. "*Feijão manteiga* (butter)."

46469. "*Feijão mulata gorda*."

46470. "*Feijão preto* (black)."

46471 and 46472. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

46471. "*Feijão fradinho.*" **46472.** "*Feijão macaca.*"

46473. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ.

Japanese apricot.

From Yuba City, Calif. Presented by Mrs. J. H. Barr. Received August 22, 1918.

"Seeds from a tree of the so-called plumcot. Since this species has shown promise as a stock resistant to crown-gall, the seeds from this plumcot are to be distributed for testing for resistance to this disease." (*David Fairchild.*)

46474. BRABEJUM STELLATIFOLIUM L. Proteaceæ.

From Pretoria, South Africa. Presented by Mr. I. B. Pole Evans, Division of Botany, Department of Agriculture. Received August 22, 1918.

A shrub or small tree 8 to 10 feet high, found in the western part of South Africa. The purplish twigs bear lanceolate, serrate, coriaceous leaves in whorls of six. The white sweet-scented flowers are borne in dense axillary racemes 3 to 6 inches long and are followed by ovoid, densely velvety fruits 1 to 2 inches long, each containing a single seed. The seed may be eaten after prolonged soaking in water. The red reticulated wood is used for joiners' and turners' ornamental work. (Adapted from *Thiselton-Dyer, Flora Capensis, vol. 5, p. 504.*)

46475. BRASSICA OLERACEA VIRIDIS L. Brassicaceæ

Jersey tree kale.

From St. John, Jersey, Channel Islands, England. Presented by Mr. D. R. Bisson. Received August 24, 1918.

"In this section Jersey kale is sown at the end of summer, then transplanted to 2 to 3 feet apart about November. It must be protected to stand severe frost. Its stalk attains a height of 8 to 12 feet. The leaves of the growing plant are used for feeding cattle and pigs." (*Bisson.*)

For previous introduction, see S. P. I. No. 44829.

46476. ORYZA SATIVA L. Poaceæ.

Rice.

From Acapulco, Mexico. Presented by Mr. John A. Gamon, American consul. Received August 29, 1918.

"Purple rice (arroz morado). From the neighborhood of Tecpan, State of Guerrero." (*Gamon.*)

Introduced for the variety tests being carried on by the Office of Cereal Investigations and for trial by other cooperators.

46477. BELOU MARMELOS (L.) Lyons. Rutaceæ.

Bel.

(*Aegle marmelos* Correa.)

From Shahjehanpur, India. Presented by Mr. N. L. Rockey, district superintendent, Methodist Episcopal Church. Received September 3, 1918.

"The bel fruit grows plentifully in India. It is prized as a fruit from which to make sherbet. Some of the fruits are very fine; others are useless. It has the flavor of concentrated peaches. The fruit is extremely valuable in the treatment of dysentery, as it is a mild astringent. At the same time it is a food." (*Rockey.*)

46478 and 46479.

From Calcutta, India. Presented by Mr. Humphrey G. Carter, economic botanist, Indian Museum. Received July 1, 1918. Quoted notes by Mr. Carter.

"From Hsipaw in the Shan States in the north of Burma. I have received a packet of mixed seeds."

46478. *BRASSICA CHINENSIS* Just. Brassicaceæ.

Mustard.

"The seeds are extremely fine."

46479. *BRASSICA RUGOSA* (Roxb.) Prain. Brassicaceæ.

Mustard.

"The seeds have a rugose testa."

46480 and 46481.

From Zacuapam, Mexico. Presented by Dr. C. A. Purpus. Received August 24, 1918. Quoted native names by Dr. Purpus.

46480. *CAJAN INDICUM* Spreng. Fabaceæ.

Pigeon-pea.

"*Frijolito garbanzo.*"

"The pigeon-pea, or guandu, supposed to be a native of India, is cultivated widely for food in the Tropics and Subtropics. It is perennial in frostless regions, but is usually cultivated as an annual. The plant develops into a large, semiwoody bush reaching a height of 5 to 10 feet. Although the skin of the pigeon-pea is a little tough, the flavor is good." (*R. A. Young.*)

For previous introduction and fuller description, see S. P. I. No. 46050.

46481. *CRATAEGUS MEXICANA* Moc. and Sesse. Malaceæ.

Hawthorn.

"*Tejocote.*"

A bushy tree 8 to 10 feet high, with oblong leaves and large, light-yellow fruits, native of the table-lands of Mexico.

For previous introduction and description, see S. P. I. No. 45818.

46482 to 46486.

From British Guiana. Presented by Mr. John Ogilvie. Rupununy River. Received August 27, 1918. Quoted notes by Mr. Ogilvie.

South American shrubs used as fish poisons.

46482. *SESBAN* sp. Fabaceæ.

"No. 1. *Hairy* or *Ai*. A small shrub planted by natives around their houses or in the fields. It grows easily and matures quickly. The leaves and small twigs are pounded and thrown into the pool."

46483. (Undetermined.)

"No. 2. A shrub planted as above. The leaves and fruits are picked while green and rubbed to a pulp on a grater, then mixed with grated roots of the bitter or poisonous cassava. It keeps if not allowed to mildew. Pellets the size of a marble are thrown into the creek."

46484. (Undetermined.)

"No. 3. Found wild in the forest and grows rapidly on old abandoned clearings. It becomes a tree 60 to 100 feet high and 2 feet in diameter, with soft white wood. The leaves, seeds, and twigs are pounded and thrown into the water."

46482 to 46486—Continued.**46485.** CARYOCAR sp. Caryocaraceæ.

"No. 4. *Kowar*. Grows plentifully along banks of all creeks and rivers in the interior. It reaches a height of 100 feet and over and a diameter of 2 or 3 feet. The heartwood is tough and exceedingly cross-grained; makes good native corrals. The fruit is pounded in a small hole in the ground and thrown into the pool. The juice which collects while pounding the fruit is carefully scooped up and thrown in with the pounded fruit. The leaves are seldom used, as they are not nearly so powerful. The juice is exceedingly painful if it gets in the eyes, and severe headache and vomiting are caused to Europeans by inhaling the fumes when pounding the fruit."

46486. (Undetermined.)

"No. 5. *Inyak*. Grows abundantly on the open prairie only on the higher sterile ridges and mountains, on soil consisting of hard red decomposed diorite. It is a small stunted shrub not more than 20 feet high. The pounded leaves are used."

46487 to 46489.

From Los Banos, Laguna, Philippine Islands. Collected by Mr. N. Catalan, College of Agriculture. Received September 3, 1918. Quoted notes by Mr. Catalan.

46487. CANARIUM LUZONICUM (Blume) A. Gray. Balsameaceæ.

"*Pili*. From Mount Maquiling, Los Banos. The tree is a source of the 'brea blanca' of commerce. The stone of the fruit contains an oily endosperm which is very good to eat. The plant grows in the forest at low altitudes."

46488. PAHUDIA RHOMBOIDEA (Blanco) Prain. Cæsalpiniaceæ.
(*Afzelia rhomboidea* Vidal.)

"*Tindalo*. From Mount Maquiling, Los Banos. A tree that is usually found in somewhat open situations at low altitudes. The wood is very durable and beautifully colored; used for finer constructions; one of the best Philippine woods."

46489. KOORDERSIODENDRON PINNATUM (Blanco) Merr. Anacardiaceæ.
(*K. celebicum* Engl.)

"*Amuguis*. From Mount Maquiling, Los Banos. A medium to large tree, growing in the forest at low altitudes. According to the Philippine standard of classification, the wood falls under the third class."

46490 to 46499.

From Rosario, Argentina. Purchased in the markets by Mr. Wilbert L. Bonney, American consul. Received September 4, 1918. Quoted notes by Mr. Bonney.

These legumes have been introduced for use in a series of experiments in testing and breeding varieties of South American plants bearing beanlike seeds for the purpose of selecting or developing strains suited to the various conditions obtaining in different parts of the United States.

46490. PHASEOLUS LUNATUS L. Fabaceæ.

Lima bean.

"From the Province of Buenos Aires."

46490 to 46499—Continued.

46491 to 46495. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.46491. "*Porotos colorados* (Arroyo Seco). From the Province of Santa Fe."

46492. "Imported from Chile."

46493. "*Sanjuanino*. From the Province of San Juan."46494. "*Porotos mendocinos*. From the Province of Mendoza."46495. "*Salteño*. From the Province of Salta."46496 to 46498. *VICIA FABA* L. Fabaceæ. Broad bean.46496. "*Habas entrerrianas*. From the Province of Entre Rios."46497. "*Habas de seville*. From Santa Fe Province."46498. "*Habas salteñas*. From the Province of Salta."46499. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

"From the Province of Mendoza."

46500. *BELOT MARMELLOS* (L.) Lyons. Rutaceæ. Bel.

(Aegle marmelos Correa.)

From Peradeniya, Ceylon. Presented by Mr. H. F. Macmillan, superintendent of the Royal Botanic Gardens. Received September 5, 1918.

For previous introduction and description, see S. P. I. No. 46477.

46501. *ERUCA SATIVA* Hill. Brassicaceæ. Roquette.

From India. Presented by Mr. A. T. Gage, director of the Royal Botanic Gardens at Sibpur, near Calcutta. Received September 6, 1918.

Roquette, or rocket-salad, is a low-growing plant from southern Europe, the leaves of which resemble those of radish and turnip. It is much used by the French as a spring and autumn salad and potherb. The flavor of the young tender leaves bears a strong resemblance to that of horse-radish. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 5, p. 2981.)

46502 to 46521.

From Para, Brazil. Presented by Mr. André Goeldi through the American consul. Received September 9, 1918. Quoted notes by the consul.

These legumes have been introduced for use in a series of experiments in testing and breeding varieties of South American plants bearing beanlike seeds, for the purpose of selecting or developing strains suited to the various conditions obtaining in different parts of the United States.

46502 to 46508. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean."No. 6, *Favas sortidas*." This package contained six varieties, which were separated as follows:

46502. A. Medium-sized beans, nearly white, with black specks on the edge.

46503. B. Small white beans.

46504. C. Large white beans.

46505. D. Large white beans with black spots and lines.

46506. E. Medium-sized grayish beans with dark-brown eye.

46507. F. Medium-sized reddish brown beans.

46508. "No. 13, *Fava preta* (black bean)."46509 to 46518. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.46509. "No. 1, *Rajado* (striped bean)."

46502 to 46521—Continued.

46510. "No. 2. *Feijão salmão* (salmon bean)."

46511. "No. 4. *Feijão viúva alegre* (merry widow bean)."

46512. "No. 5. *Mulâtinho* (mulatto)."

46513. "No. 7. *Feijão preto* (black bean)."

46514. "No. 8. *Feijão favinha* (little bean)."

46515. "No. 10. *Feijão carrapato* (tick bean)."

46516. "No. 12. *Feijão branco* (white bean)."

46517. "No. 14. *Feijão enxofre* (sulphur bean)."

46518. "No. 15. *Feijão vermelho* (red bean)."

46519. *VIGNA CYLINDRICA* (Stickm.) Skeels. Fabaceæ. Catjang.
"No. 9. *Feijão manteiga* (butter bean)."

46520 and 46521. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

46520. "No. 3. *Frade* (friar bean)."

46521. "No. 11. *Feijão boca preta* (black-mouth bean)."

46522. CEIBA PENTANDRA (L.) Gaertn. Bombacaceæ. **Kapok.**
(*Eriodendron anfractuosum* DC.)

From Guadalajara, Mexico. Presented by Mr. John R. Silliman, American consul. Received September 10, 1918.

"The kapok tree, native in the American Tropics, is widely distributed in the Tropics of both hemispheres. It attains a height of 75 to 100 feet, with wide-spreading horizontal branches, making an attractive ornamental or shade tree. It is often planted along the borders of fields for fence posts. It begins to bear seed pods containing kapok down when about 5 years old, and the yield of pods increases with the age of the tree. Well-developed trees under favorable conditions yield about 7,000 pounds per acre. Kapok can not be spun, but it is an excellent material for pillows, mattresses, life preservers, etc., and its use is rapidly increasing." (L. H. Dewey.)

For previous introduction and further description, see S. P. I. No. 45557.

46523 and 46524.

From Los Banos, Philippine Islands. Collected by Mr. N. Catalan, College of Agriculture. Received September 11, 1918.

46523. *ERYTHRINA VARIEGATA* Stickm. Fabaceæ.
(*E. indica* Lam.)

"*Dapdap*. A tree with brilliant red flowers which form a very showy inflorescence. Seeds collected from a tree on the college farm, June 28, 1918."

46524. *ORMOSIA CALAVENSIS* Azaola. Fabaceæ.

"*Bahai*. The seed is said to be of medicinal value for certain cases of stomach trouble. The tree grows on lower portions of the forest. Seeds collected from a tree on the college farm, July 20, 1918."

46525 to 46530.

From Punta Arenas, Chile. Presented by Mr. John R. Bradley, American consul. Received September 11, 1918.

These beans have been introduced for use in a series of experiments in testing and breeding varieties of plants bearing beanlike seeds, for the purpose of

selecting or developing strains suited to the various conditions obtaining in different parts of the United States.

46525. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.

Large white beans.

46526 to 46530. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

46526. Small white beans.

46527. Light-brown beans.

46528. White and yellowish white beans mixed.

46529. Mixed beans from light yellow to light brown.

46530. Grayish brown beans.

46531. NORMANBYA MERRILLII Beccari. Phœnicaceæ. Palm.

From Manila, Philippine Islands. Presented by Mr. E. D. Merrill, acting director of the Bureau of Science. Received September 12, 1918.

"*Bonga de China* or *Bonga de Jolo*. A medium-sized palm with graceful, somewhat curved, pinnate leaves, resembling the common betel-nut palm, but not so tall. The leaves are rather glaucous, and the pretty crimson fruits are borne just below the leaves in medium-sized bunches; the individual fruits are less than 1 inch long. This palm thrives remarkably well in Manila." (*Merrill*.)

For previous introduction, see S. P. I. No. 42722.

46532 to 46534.

From Jamaica Plain, Mass. Presented by Dr. C. S. Sargent, of the Arnold Arboretum. Received September 13, 1918.

46532. MORUS ACIDOSA Griffith. Moraceæ.

Usually a broad shrub from 3 to 16 feet in height, but occasionally forming a tree 25 feet tall. It is found in the Provinces of Hupeh and Szechwan, China. The leaves are very variable in size and shape and are not used for feeding silkworms. The fruits are dark red or shining black and are quite palatable. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, p. 300.)

For previous introduction, see S. P. I. No. 45708.

46533. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino. Amygdalaceæ. Sargent's cherry.
(*P. sargentii* Rehder.)

A handsome, large tree, of great ornamental value; hardy as far north as Massachusetts and bearing profusely, in early spring, handsome, rose-pink, single flowers.

For previous introduction, see S. P. I. 45248.

46534. PRUNUS TOMENTOSA Thunb. Amygdalaceæ. Bush cherry.

A broad, vigorous shrub, from northern China; one of the earliest cherries to flower. The flowers are large, with the white petals more or less tinged with red toward the base; the small bright-red, slightly hairy fruits are of good flavor. (Adapted from *Arnold Arboretum Bulletin of Popular Information*, No. 19.)

"The plant thrives and fruits abundantly from Georgia to Canada. The ripe fruits make a delicious jelly." (*Bisset*.)

For illustrations showing the use of this species as a flowering shrub and as a fruiting plant, see Plates III and IV.



THE DOWNY BUSH CHERRY OF NORTH CHINA. (*PRUNUS TOMENTOSA* THUNB., S. P. I. No. 46534.)

The extreme hardiness of this species make it a promising dooryard shrub for the northern Great Plains region. It has grown well at Ottawa, Canada. While its flowers are too delicate to make this shrub ideal as an ornamental, it is one of the earliest of all the cherries to bloom, and its dark-green downy foliage and deep-red juicy cherries of good flavor make it a most attractive dwarf fruiting shrub. Worked upon the wild Chinese peach (*A. mandalus davidiana*) it is said to be longer lived than on its own roots. (Photographed by Peter Bisset at the Yarrow Plant Introduction Gardens, Rockville, Md., May 5, 1919; P25126FS.)



FRUITING BRANCHES OF THE DOWNY BUSH CHERRY. (*PRUNUS TOMENTOSA* THUNB., S. P. I. No. 46534.)

The miniature cherries of this North Chinese bush (shown one-half actual size) are refreshingly acid, and an excellent preserve has been made from them. In Canada, where the species does well, it is one of the shrubs recommended for dooryard planting, and it deserves a wide distribution in our northern Great Plains area. Little work has been done yet in the selection of large-fruited seedlings. (Photographed by Peter Bisset, Chico, Calif., May 27, 1918; P24041ES.)

46535. MADHUCA INDICA Gmel. Sapotaceæ.*(Bassia latifolia Roxb.)*

From Scharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens. Received September 14, 1918.

Mahuca. A large deciduous tree from northern India, cultivated widely in India for its cream-colored, sweet, fleshy corollas which are dried for eating and for the manufacture of spirits.

For previous introduction, see S. P. I. No. 45195.

46536. SOLANUM sp. Solanaceæ.**Potato.**

From Tucuman, Argentina. Tubers presented by Mr. H. F. Schultz, Estacion Experimental Agricola. Received September 17, 1918.

"I am sending you to-day a small lot of the native wild potato, of which it is extremely difficult to get tubers, on account of the very short growing season we had this year. The tubers could not start growth at the accustomed time on account of prolonged drought in early summer, and it appears that they suffered later on through the extremely wet weather of the latter part of summer." (*Schultz.*)

46537 to 46559. PAPAVER SOMNIFERUM L. Papaveraceæ. Poppy.

From Calcutta, India. Presented by Mr. James A. Smith, American consul general, who obtained them from the Economic Botanist to the Government of the United Provinces. Received September 17, 1918. Information by Mr. Smith.

46537. No. 1. *Katdi danti*. From Rae Bareilly.

46538. No. 2. *Ujli danti*, Big Posti. From Rae Bareilly.

46539. No. 3. *Posti*. From Faizabad.

46540. No. 4. *Kataila*. From Faizabad.

46541. No. 5. *Bharbharwa*. From Faizabad.

46542. No. 6. *Posti*. From Bahraich.

46543. No. 7. *Bhagalpur*. From Bahraich.

46544. No. 8. *Bhagalpur*. From Bahraich.

46545. No. 9. *Chinsarwa*. From Bahraich.

46546. No. 10. *Chinsarwa*. From Bahraich.

46547. No. 11. *Kan phatwa*. From Bahraich.

46548. No. 12. *Kataila*. From Bahraich.

46549. No. 13. *Kali danti*. From Ghazipur.

46550. No. 14. *Golgalwa*. From Ghazipur.

46551. No. 15. *Bhagwatia*. From Ghazipur.

46552. No. 16. *Jeliwa*. From Ghazipur.

46553. No. 17. *Hariella*. From Etawah.

46554. No. 18. *Kali danti*. From Etawah.

46555. No. 19. *Kataila*. From Etawah.

46556. No. 20. *Posti*. From Lucknow.

46557. No. 21. *Baunia*. From Lucknow.

46558. No. 22. *Mandrass*. From Lucknow.

46559. No. 23. *Kataila*. From Lucknow.

46560. ALLIUM TRIQUETRUM L. Liliaceæ.

From Algiers, Algeria. Bulbs presented by Dr. L. Trabut. Received September 18, 1918.

"Used by the natives as a vegetable. Resembles a leek. Plant the bulbs 8 inches apart and not very deep." (*Trabut.*)

46561 and 46562. COPERNICIA CERIFERA Mart. Phœnicaceæ.

Wax palm.

From Brazil. Presented by Mr. H. M. Curran. Received September 6, 1918. Quoted notes by Mr. Curran.

A palm 25 to 30 feet high with fan-shaped, rather finely cut leaves 2 to 3 feet in diameter. The wax is extracted by drying the leaves in the sun, when the wax appears in the form of a powder. The fruit is valued for hog feed. The trunks are extensively employed in building houses. (Note by *Dorsett, Shamel, and Popenoe.*)

46561. "Seeds from Pernambuco, Brazil."

46562. "Seeds from Bahia, Brazil."

For previous introduction and further description, see S. P. I. No. 37866.

46563. ORYZA SATIVA L. Poaceæ.

Rice.

From Trujillo, Peru. Presented by Mr. A. Martin Lynch. Received September 13, 1918.

Seed of the 90-day rice known as *Italiano*. Introduced for the variety tests being carried on by the United States Department of Agriculture.

46564. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. Yerba maté.

From Cairo, Egypt. Presented by Mr. F. S. Walsingham for the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received September 14, 1918.

A small evergreen tree, native of Paraguay and Brazil, whose leaves are roasted and ground to make the Paraguay tea of commerce. (Adapted from *Friderici, Tropenpflanzer*, p. 776.)

For previous introduction with full description, see S. P. I. No. 43456.

46565. AVENA STERILIS L. Poaceæ.

Oats.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received September 14, 1918.

"Variety *culta*. Several kinds in mixture." (*Trabut.*)

46566. PYRUS COMMUNIS × SEROTINA. Malaceæ.

Pear.

From Avery Island, La. Cuttings presented by Mr. E. A. McIlhenny. Received September 17, 1918.

"This pear originated in the orchard of Mr. E. A. McIlhenny, Avery Island, La. Mr. McIlhenny has a LeConte orchard, 8 or 9 years old, propagated from trees made from cuttings. The original trees from which the cuttings were taken have been lost. Eight trees in the LeConte orchard are of the new type

and differ materially from the LeConte trees. The new type is spreading in habit and has roundish fruit about as large as a medium-sized apple. The fruit is of fair quality, comparing favorably with LeConte. It is believed that the eight trees are bud sprouts from a limb or branch from which the original cuttings were taken. The fact that there are only eight trees would indicate that there was a limited supply of wood. This pear is of interest because up to this time it has been practically free from fire-blight, while the LeConte trees in the same orchard have blighted badly." (B. T. Galloway.)

46567. CAPRIOLA INCOMPLETA (Nees) Skeels. Poaceae. Grass.
(*Cynodon incompletus* Nees.)

From Johannesburg, South Africa. Presented by Mr. J. Burt Davy. Received September 18, 1918.

"This species spreads by surface runners and does not produce stolons as does *C. dactylon*. It is difficult to collect seed, as the grass is so closely grazed by stock of all sorts that it is difficult to find mature seed." (Davy.)

46568 to 46572.

From Canton, China. Presented by Mr. G. Weidman Groff of the Canton Christian College. Received September 23, 1918. Quoted notes by Mr. Groff.

46568 to 46570. LITCHI CHINENSIS Sonner. Sapindaceae. Lychee.
(*Nephelium litchi* Cambess.)

46568. "*Shanchi*, or mountain lychee. One of the wildest forms of lychee growing in the Tsenyuen district. Especially valuable as stock. July 17, 1918."

46569. "*W'aa'i chi*; one of the edible forms. Fruit from the orchards of Canton Christian College. July 17, 1918."

46570. "*Loh haai tuen*; an edible lychee. Secured from orchards of the Canton Christian College. July 17, 1918."

46571. MYRICA RUBRA Sieb. and Zucc. Myricaceae. Yang mei.

"*Shui yeung mui*. A very interesting fruit from Canton. A kind of plumlike fruit common on the market of Canton in the month of May. This fruit makes a most attractive appearance, and it is always marketed with the dark-green leaves attached to the fruit. In general appearance it is not unlike a strawberry, but it is more rounded. It has a roughened skin and is quite acid in taste. There is but one seed, which is difficult to detach from the flesh. July 18, 1918."

An old tree as it grows in China is shown in Plate V, while Plate VI shows fruits of an improved variety.

46572. PRUNUS MUME Sieb. and Zucc. Amygdalaceae. Japanese apricot.

"These fruits, known on the Chinese (Cantonese) markets as *Hang mui*, are quite common in Canton in the month of May. The fruit is somewhat like an apricot. It is said there are several different types. A bitter principle exists in these particular fruits, but they make a very fine jelly. This number has possibilities as a cultivated fruit or as a stock. July 18, 1918."

46573. AZADIRACHTA INDICA Juss. Meliaceæ. Neem tree.*(Melia azadirachta L.)*

From Sibpur, near Calcutta, India. Presented by Mr. G. T. Lane, curator of the Royal Botanic Garden. Received September 14, 1918.

A large tree, sometimes 50 feet tall, native to India. The pinnate leaves are made up of 9 to 15 ovate, serrate leaflets. The white, fragrant flowers hang in graceful panicles and are followed by clusters of ovoid, dark-purple drupes the size of an olive. The wood resembles mahogany and takes a beautiful polish. It is used in making furniture, carts, ships, agricultural implements, and Hindu idols. The sap is used in the spring in making a cooling drink. A gum, which exudes from the bark, is used as a stimulant. Margosa oil, extracted from the pulp of the fruits by boiling or by pressure, is an acrid, bitter oil used in medicine and in dyeing. The seeds are employed in killing insects. (Adapted from *Brandis, Forest Flora of India*, p. 67.)

46574. PERSEA AMERICANA Mill. Lauraceæ. Avocado.*(P. gratissima Gaertn. f.)*

From Coyacan, Mexico. Presented by Mrs. Zelia Nuttall. Received September 25, 1918.

"When Mr. Popenoe was here lately he asked me what variety of aguacate I thought the best I had ever tasted, here or in other countries. I told him that I considered those of a certain kind grown on my own place, Casa Alvarado, the finest in flavor and creaminess; besides, the skin was so thin it could be peeled off as readily as that of a ripe peach. I was able to let him try the first ripe ones of this year's crop, and he was delighted with them and asked me to send him lots of seeds." (*Mrs. Nuttall.*)

46575. DACRYDIUM CUPRESSINUM Soland. Taxaceæ. Rimu.

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received September 24, 1918.

"Rimu seed. Prettiest of all our native trees; a real treasure." (*Wright.*)

This pine is one of the most beautiful objects in the New Zealand bush. Its pale-green drooping branches differ from those of any other forest tree. The leaves are only small prickles running up a long stem, from which branch other small stems whose united weight causes the main stem to hang like the branches of the weeping willow. The whole tree, when young, has the appearance of a lycopodium. The fruit is tiny, but beautiful, the nut being blue-black and the cup red. The timber is red and yellow and beautifully marked. It is used to great advantage in dados, panels, and for ceilings. The Tarauaki rimu is especially straight in the grain and very resinous. It is much used for bridge building in that district. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 74.)

46576 to 46586.

From eastern Asia. Cuttings collected by Prof. F. C. Reimer, superintendent, Southern Oregon Experiment Station, Talent, Oreg. Received April 16, 1918. Numbered September 31, 1918. Quoted notes by Prof. Reimer.

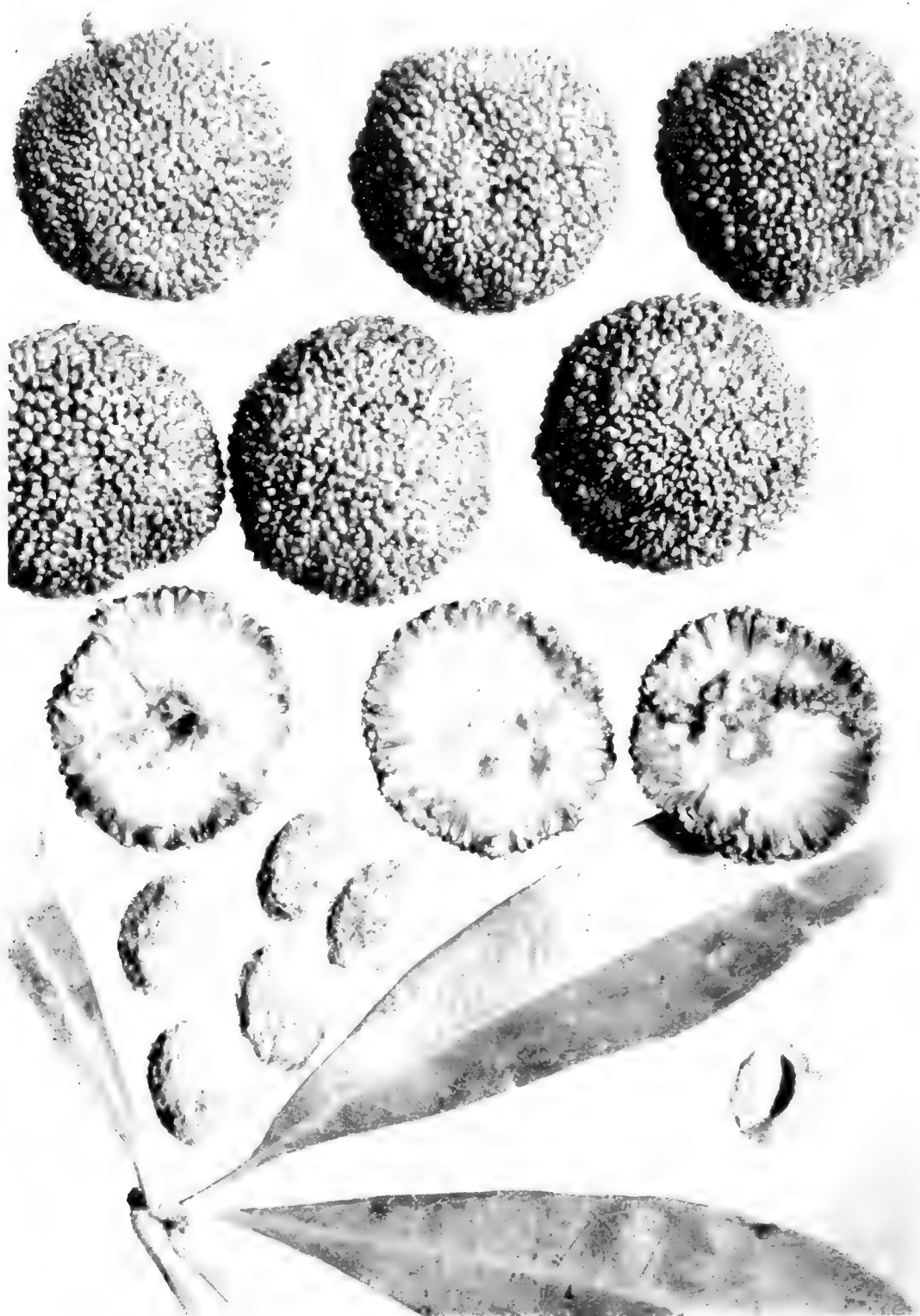
46576. PYRUS sp. Malaceæ. Pear.

"(No. 51. *Mi li*. Obtained at Maoshan, near Malanyu, Chihli, China.) This is a roundish medium-sized pear, about 2 inches in diameter. It is yellow in color, and the calyx is deciduous. The flesh is firm and



AN OLD TREE OF THE YANG MEI IN SHANGHAI. (*MYRICA RUBRA* SIEB. AND ZUCC., S. P. I. No. 46571.)

Its sea-green foliage and carmine-colored fruits the size of small plums make this a very attractive park tree. Its slow growth has doubtless interfered heretofore with its figuring anywhere very largely as an orchard tree, but its freedom from disease and ability to grow on rocky soils taken in connection with the excellent character of its fruits entitle it to much more attention than has been given to it so far. In Canton fruiting branches of it are common on the markets in May. In California trees have fruited in July. (Photographed by F. N. Meyer, Jessefield Park, Shanghai, China, June 11, 1915; P12298FS.)



FRUITS, SEEDS, AND LEAVES OF AN IMPROVED VARIETY OF THE YANG MEI.
(*MYRICA RUBRA* SIEB. AND ZUCC., S. P. I. NO. 46571.)

Whereas in Japan the *yama momo* (mountain peach), as it is called, is a fruit of comparatively little importance, in parts of China, where it is called *yang mei* or *nagi*, various distinct horticultural varieties have been developed. The fruits of these vary in size from that of a cherry to that of a medium-sized plum, in color from dull white to deep carmine, and in flavor from very acid to refreshingly sweet. The tree is evergreen and when in fruit strikingly beautiful. It is a slow grower and difficult to transplant. The fine varieties are worked on small-fruited seedling stocks. In America trees have fruited in September at Del Monte and Chico, Calif., and specimens are growing at Brooksville, Fla. This species grows wild in rather poor but well-drained rocky soils in semishaded localities and will stand temperatures of 113° F. The showy color of its fruit, the intense carmine of their juice, the ability of the tree to grow in rocky semishaded localities, and the various uses to which its fruit can be put should entitle the *yang mei* to the serious consideration of American horticulturists. For description of the introduction of seeds of the *yang mei*, see S. P. I. No. 46571. (Photographed by F. N. Meyer, Hangchow, Chekiang, China, June 30, 1915; P13220FS.)

46576 to 46586—Continued.

juicy, and the grit cells are not noticeable. The flavor is sweetish and the quality only fair. In some places in northern China this has proved the most profitable variety."

46577. PYRUS sp. Malaceæ.

Pear.

"(No. 52. *Tang li*. Obtained at Maoshan, near Malanyu, Chihli, China.) This is a large pear, ovate or ovate-oblong in shape, and has a russet color. The calyx is deciduous. The flesh is firm, and the grit cells not noticeable. The flavor is sweet and of fair quality. This is an interesting variety, since it shows some of the characteristics of *Pyrus ussuriensis*, especially in leaf characters, while the color of the fruit is not characteristic of this species. It may be a hybrid with *P. ussuriensis* as one of the parents."

46578. PYRUS sp. Malaceæ.

Pear.

"(No. 53. *Fo chien hsi*. Obtained at Maoshan, near Malanyu, Chihli, China.) This pear is of medium size, slightly flattened, yellowish in color; the calyx is deciduous; the flesh is hard, juicy, and rather sweet. It is an excellent shipper and keeper. Highly regarded in northern China."

46579. PYRUS sp. Malaceæ.

Pear.

"(No. 55. *Ma li*. Obtained at Maoshan, near Malanyu, Chihli, China.) This is a medium to large flat pear, yellow in color, russet toward the base, and covered with small light dots. It has a deciduous calyx, and the stem is of medium length. The flesh is firm, rather coarse, sweet, and fair in quality. It ripens the latter part of August in northern China."

46580. PYRUS sp. Malaceæ.

Pear.

"(No. 58. *Yarh li*. Obtained at Maoshan, near Malanyu, Chihli, China.) This is the most widely grown pear in northern China. It is of large size and resembles the *Bartlett* in shape. It has a beautiful, clear, light-yellow color. The flesh is firm, juicy, and sweet, and free from grit cells. This pear possesses extraordinary keeping qualities and can be purchased at any time throughout the entire winter. It is in best condition for eating during the latter part of winter and early spring."

46581. PYRUS sp. Malaceæ.

Pear.

"(No. 56. *Chieh li*. Obtained at Maoshan, near Malanyu, Chihli, China.) This pear is of medium size, varying from ovate to obovate in shape and dull greenish yellow in color. The calyx is persistent. The flesh is soft, very juicy, and of fair quality. It ripens about the first of September. This is a variety of *Pyrus ussuriensis*, and should prove valuable in breeding work."

46582. PYRUS PHAEOCARPA Rehder. Malaceæ.

Pear.

"(No. 36. From Chosen (Korea).) A pear which is used as a root-stock for cultivated pears at Seoul. This type produces its fruit in clusters of three to eight. The pears are from one-half to three-fourths of an inch in diameter, roundish or short turbinate in shape, brown or russet in color, and usually have three, or rarely two or four, covered cells or seed cavities. The trees which I saw were still young and from 6 to 12 feet high. The young shoots are densely pubescent. The leaves are of medium size, and the margins are crenate or bluntly serrate.

46576 to 46586—Continued.

These trees had evidently grown from the rootstock of some cultivated varieties of pears. Of no value except possibly as a stock in this country."

46583 and 46584. PYRUS SEROTINA Rehder. Malaceæ. **Pear.**

46583. "(No. 38. *Imamura Aki*. Obtained at Yokohama, Japan.)

This is one of the best varieties of pears in Japan and Chosen (Korea). It is a large, russet pear and distinctly ovoid in shape. The fruit ripens late in the fall and is in good condition to eat during early winter. In quality it ranks among the best Japanese pears."

46584. "(No. 39. *Meigetsu*. Obtained at Yokohama, Japan.) This is considered the very finest pear in Japan and Chosen (Korea). It is a very large pear, oblong or oblong-elliptical in shape, and of bright russet color. The tree is very vigorous and productive. Should be thoroughly tested in this country, especially for blight resistance."

46585 and 46586. PYRUS USSURIENSIS Makim. Malaceæ. **Pear.**

46585. "(No. 50. *Ta suan li*. Obtained at Maoshan, near Malanyu, Chihli, China.) This is one of the most interesting and may prove one of the most valuable pears that I saw in China. It is very popular in the mountain districts northeast of Peking. The fruit is medium to large in size, slightly flattened in shape, and greenish yellow in color. It has a persistent calyx, and the stem is medium to long. The flesh is hard, possesses large grit cells around the core, and has a very tart flavor. It is an excellent keeper, often remaining in good condition until early spring under suitable conditions. While it can not be recommended as a desirable commercial variety, it should prove of great value in breeding blight-resistant and hardy varieties for cold regions. In our work the wild *Pyrus ussuriensis* has shown greater resistance to fireblight than any other species, and since this species also endures more cold than any other, this variety should prove of great value in breeding work."

46586. "(No. 54. *E' li* or *nah li*. Obtained at Maoshan, near Malanyu, Chihli, China.) The fruit of this pear is very large, of oblong shape and greenish color. It ripens the latter part of September, is very fragrant, and of poor flavor. The calyx is persistent. It is to be regretted that the flavor is not better; however, its large size, and the fact that it belongs to *Pyrus ussuriensis* makes it a promising variety for breeding purposes."

46587. PYRUS USSURIENSIS Maxim. Malaceæ. **Pear.**

From China. Cuttings collected by Prof. F. C. Reimer, superintendent, Southern Oregon Experiment Station, Talent, Oreg. Received April 16, 1918. Numbered September 31, 1918. Quoted notes by Prof. Reimer.

"(No. 59. *Hung li*. Obtained at Maoshan, near Malanyu, Chihli, China.) This pear is medium to almost large in size, round or roundish oblong in shape, and yellow with an attractive red blush. The flesh is very firm, juicy, and sweet, and only fair in quality. The fruit ripens during the latter part of September and has remarkable keeping qualities, being found on the markets until late winter. It is probably of hybrid origin."

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Issued May 20, 1922

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM OCTOBER 1
TO DECEMBER 31, 1918.

(No. 57; Nos. 46588 to 46950.)



WASHINGTON:
GOVERNMENT PRINTING OFFICE.

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1918 (NO. 57; NOS. 46588 TO 46950).

INTRODUCTORY STATEMENT.

It might appear that a single one of these inventories contains enough experimental plant material to keep a corps of scientists busy for years. This is true, but the fact should not be lost sight of that these are new plants introduced for the use of an increasing number of amateurs of a great country. There are already 10,000 more or less trained experimenters scattered from Alaska to southern Florida who will look over the plants which are described here and wonder if some particular one may not add to his list of field or garden or dooryard plants. The work of testing a new plant requires years, land, money, and individual interest and attention; and the only way to do the work rapidly is to enlist the intelligent cooperation of a great many people.

A great many tropical species are represented here, and those who live in the North may wonder at this. It must not be forgotten that the plants which grow in the colder regions are those which have, by slow adaptation to the cold, crept out of the Tropics, and that there are ten times as many undiscovered useful plants remaining in the Tropics to-day as are to be found in the colder regions of the globe. The plant breeder is striving by means of his art to select the hardiest of these tropical species and adapt them for cultivation as far north as they will grow. This is a great field for research.

With the exception of a collection made by Wilson Popenoe in Mexico, all of the plants here described have come in from foreign friends of the work or through direct solicitation by correspondence.

Mr. Popenoe's collection covered by Nos. 46781 to 46787 includes the ilama, a rose-tinted fruit, which belongs in the class with the cherimoya and sugar-apple and is remotely related to the hardy papaw of the eastern United States (*Asimina triloba*). In view of the fact that triple hybrids combining three species of the genus *Annona*

have been produced and prove to be delicious new creations, the idea may not be fantastic that some one some day will bring hardiness into this remarkable tropical fruit through crosses with our hardy Asimina. Mr. Popenoe has discovered, in fact, a tropical species of the Annona family (*Sapranthus* sp., No. 46786) which curiously resembles the Asimina in the shape of its fruits, but is bright orange in color. This might bridge the gap between the Annona and the Asimina. Acres of the tropical papaya (*Carica papaya*) in southern Florida provide this fruit regularly to the southern markets, and a new variety (*Carica* sp., No. 46782), with an edible coating, or aril, around its seeds, can scarcely fail to be of interest to the public, which is rapidly growing fonder of this appetizing fruit. Much remains yet to be done in the improvement of this remarkable fruit tree. It is hard for one living in the North to realize the craving of one who lives in a region where the grape does not grow for its peculiar refreshing flavor. Mr. Popenoe has introduced another promising tropical grape called the totoloche (*Vitis* sp., 46787), which is related to the Muscadine and although still in the wild state bears clusters of berries half an inch in diameter.

Mr. J. Burtt Davy, who has contributed many new plants from South Africa, has sent in a collection (Nos. 46804 to 46820) which includes a sand binder from the Cape flats (*Acacia cyclops*, No. 46804); the kameel doorn, a shade tree from British Bechuanaland (*Acacia giraffae*, No. 46805); a pasture grass (*Eragrostis superba*, No. 46806); a hibiscus with deep-crimson flowers (*Hibiscus urens*, No. 46807); a beautiful blue-and-white Lobelia (*Lobelia erinus microdon*, No. 46808); the karree boom, a species of sumac which is reported to resemble the pepper tree so much used in California but to be hardier and even more ornamental in habit (*Rhus viminalis*, No. 46810); and a collection of the best yielding wheats from the western provinces of South Africa (Nos. 46812 to 46817).

During his trip to Europe on war work, Dr. W. A. Taylor, Chief of the Bureau of Plant Industry, visited the Plant Breeding Institute of Prof. Biffen, of Cambridge, England, and sent in seed of the Yeoman wheat (No. 46797) which had been such a remarkable yielder in England; a preliminary test gave 96 bushels per acre. It is a cross between one of Prof. Biffen's varieties and the Red Fife wheat of Canada and may prove suited to some of our own wheat areas.

The success of the Federation wheat (No. 46794) on the Pacific coast has, I understand, been a matter of keen satisfaction to the Australian friends of that remarkable plant breeder, Farrar, whose work was so long in being recognized.

The development of Australia is bringing to the front many valuable new plants. This inventory chronicles the arrival of the elephant grass (*Pennisetum purpureum*, No. 46890), which yields there 30 tons of hay per acre; a hardier species of the river oak or Australian pine (*Casuarina cunninghamiana*, No. 46881) than the one which has been planted by the hundreds of thousands in southern Florida; a drooping-branched species of the she-oak (No. 46882), which is said to be most beautiful; and the edible canna (*Canna edulis*, No. 46821), which is grown in Australia for the production of arrowroot and which has already shown remarkable adaptability to cultivation on the Everglades of Florida, a single plant having produced 80 pounds of tubers.

The problem of having green leafy vegetables throughout the summer in tropical regions is a difficult one, and the introduction from Yucatan of the chaya (*Jatropha urens*, No. 46862), a rapid-growing bush or small tree with succulent leaves which are cooked and eaten with eggs, like spinach, is worthy of particular mention. The idea of a dooryard tree from which a mess of greens can be picked strikes us as strange, because we have always gotten our tender leaves from low-growing plants; but there is no reason for discrimination against the tree.

The guarana (*Paullinia cupana*, No. 46863) is a tropical species of Paullinia from Para, where the seeds, which contain 5 per cent of thein, are used to make a beverage. The searchers for this alkaloid may find this species a valuable source.

In the tropical vegetable garden of the future the yam (*Dioscorea alata*, No. 46768) will not be omitted, and those varieties which rival the best potato in flavor and texture will come into favor. Already, discriminating growers in Florida are beginning to grow several of the introduced varieties.

Mrs. Nuttall, whose acquaintance with the Indian food plants of Mexico is exceptional, recommends from her own personal experience the huauhtzontli (*Chenopodium nuttalliae*, Nos. 46632 and 46633) as a delicious dish when prepared in Mexican fashion. As the species seems to be very easily grown in the Southwest, the gardeners of that region may find in it a desirable new vegetable.

There is something fascinating to a child and to many grown-up people in a gourd. The most brilliantly colored one which I have seen is the *Trichosanthes quinqueangulata* (No. 46642) from the Philippines. It is about the size of those baubles which are hung on Christmas trees, and being beautiful carmine-red in color and lasting for months it is most attractive and should be grown in the South and shipped north at Christmas time.

Citrus growers in California and Florida will await impatiently the fruiting of the Vermilion orange or Chu kaa (*Citrus nobilis*, No.

46646), of Swatow. Atherton Lee predicts that if this orange succeeds as well in this country as it does in South China it will rival the Navel, the Valencia, and the Satsuma in popularity. As Mr. Lee has been studying citrus canker in the Orient, and as he finds this variety resistant to that disease, its thorough trial by citrus growers is desirable.

The Chinese jujube has proved such a success in the irrigated valleys of California and in Texas that the fruiting of the strictly tropical species (*Ziziphus mauritiana*, No. 46720) at Miami, Fla., is being watched with considerable interest. The same propensity to bear large crops seems to characterize this tropical species as it does the Chinese one, and it would not be surprising if this species should become a common fruit tree wherever it can be grown.

The night-blooming cereus is one of those plants the flowering of which is an event in anyone's garden. A species from Colombia (*Cereus* sp., 46721), with blood-red flowers the size of a saucer, should attract the attention of greenhouse owners and may lead to races having all sorts of delicate-colored flowers.

Artemisia cina (No. 46712) is the plant which yields the vermifuge known as wormseed. It is a wild species in Russian Turkestan. Its introduction into this country and cultivation at Chico, Calif., would seem to indicate the possibility of a commercial crop in this important drug plant, since its wide use in the treatment of hogs has created a large demand for it.

Prof. Sargent has selected as one of the loveliest of all flowering trees, *Malus arnoldiana* (No. 46698), a hybrid between *M. pulcherrima* and *M. cerasifera*, both of which are probably of hybrid origin.

It is now over a century since the tomato came into notice as the "poison love apple" which everyone was cautioned not to eat. Its relative from Colombia (*Solanum quitoense*, No. 46947), with fruits the size of small oranges which are used there for flavoring preserves, seems to have been left untested, although it is worthy of trial wherever it will grow.

The extent to which trees and shrubs can be used as forage for cattle has not been thoroughly investigated anywhere, although in India a species of jujube is thus used, and in Brazil a species of sensitive plant (*Schrankia leptocarpa*, No. 46719) is employed. The recommendation of Sr. Argollo Ferrão is sufficient to make it worth while testing this plant seriously on the Everglades of southern Florida.

The spectacular development of the Balsa wood industry, which has grown almost overnight into a very important factor in the refrigeration business, would seem to make it worth inquiry as to whether the New Zealand cork-wood tree (*Entelea arborescens*, No.

46749), which produces wood little more than half as heavy as cork, might not be useful for the same purposes.

The tropical jack-fruit tree is hardy in southern Florida, but its fruits are of little value. If its near relative (*Artocarpus odoratissima*, No. 46635), which Wester declares has deliciously flavored fruits, should prove as hardy, it might add another valuable tree to the list of those which the southern Florida grower can have about his home.

The South African amatungulu (*Carissa grandiflora*), which was introduced by Lathrop and Fairchild from Natal in 1902, has become the favorite hedge plant of southern Florida. Its relative, *Carissa carandas* (No. 46636), which bears black instead of crimson fruits, is said by Wester to be one of the best small fruits which has been introduced into the Philippines in recent years. What may be done with it in Florida, or whether hybrids of these various species of *Carissa* can be made, remains for the plant breeders to determine.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels, while the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Miss Esther A. Celander.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., September 30, 1921.

INVENTORY.¹

46588. *PISTACIA CHINENSIS* Bunge. Anacardiaceæ.

Chinese pistache.

From Chico, Calif. Collected by Mr. R. L. Beagles, of the Bureau of Plant Industry. Received October 19, 1918.

"Seeds gathered at the Plant Introduction Field Station, Chico, Calif., from trees which were grown from seeds collected in China by Mr. Frank N. Meyer, received here in 1908, and assigned S. P. I. No. 21970." (*Peter Bisset.*)

46589 to 46594.

From Bender Abbas, Persia. Received May 9, 1918, without name of sender or information other than the numbers given here. Numbered October 1, 1918.

46589. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ.

Barley.

(84604 No. 80.)

46590 to 46594. *TRITICUM AESTIVUM* L. Poaceæ.

Wheat.

(*T. vulgare* Vill.)

"A collection of Persian wheat varieties, probably of hybrid origin. All samples are awned and have brown, pubescent glumes and soft, white kernels." (*J. A. Clark.*)

46590. (84604 No. 80.)

46593. (84607.)

46591. (84605 No. 78.)

46594. (84606.)

46592. (84604 No. 81.)

46595. *PENTSTEMON PALMERI* A. Gray. Scrophulariaceæ.

Beardtongue.

Plants grown at the Plant Introduction Field Station, Chico, Calif. Numbered for convenience in recording distribution.

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by the Office of Foreign Seed and Plant Introduction; and further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases undoubtedly be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

"*Pentstemon palmeri*, from the western and southern slopes of the San Francisco Mountains of Arizona, is one of the best and most promising native species of this useful genus of ornamental plants. It withstands droughty conditions well and responds remarkably to good treatment. In nature the spikes stand 4 to 6 feet high, and the plant is reduced to little more than a rosette of basal leaves at the close of the long, dry, late summer and autumn. Under conditions at Chico, Calif., the flowering stems may stand 6 to 7 feet high, and the plants go into winter with a vegetative growth of 18 inches or more. Its abundant glaucous green foliage, long spike (2 to 3 feet) of large light-pink flowers opening progressively from below, together with its very robust habit, make it a desirable acquisition to our long list of pentstemons. It has good seed habits and if started early in flats and transplanted into the open in early spring it will blossom sparingly the same year." (*David Griffiths.*)

46596 to 46629.

From Ecuador. Seeds and tubers collected by Dr. J. N. Rose, associate curator, National Herbarium, Washington, D. C. Received September 25, 1918. Quoted notes by Dr. Rose. Numbered October, 1918.

46596 to 46607. *ZEAMAYS* L. Poaceæ.

Corn.

"No. 10a. Various samples of corn obtained from Indians in the Ambato market."

46596. "Maroon."

46597. "Reddish brown."

46598. "Dark red-brown."

46599. "Light red-brown."

46600. "Light brown."

46601. "Light brown shading to cream."

46602. "Yellow; kernel short and thick."

46603. "Yellow; kernel long and slender."

46604. "Light yellow; kernel broad."

46605. "Light yellow; kernel wedge shaped."

46606. "Cream color."

46607. "Nearly white."

46608 to 46610. *OXALIS TUBEROSA* Molina. Oxalidaceæ.

Oca.

46608. "No. 19a. Tubers of an elongated form from Ambato."

46609. "No. 19b. Tubers of a red form obtained at Huigra."

46610. "No. 19c. Tubers of a yellow form."

46611. *CUCURBITA MAXIMA* Duchesne. Cucurbitaceæ.

Pumpkin.

"No. 23. *Zafallo*. Fruit very large and sometimes weighing 100 pounds. Used like our pumpkin."

46612. *DOLICHOS LABLAB* L. Fabaceæ.

Bonavist bean.

"No. 24: 24121. *Avilla*; a legume. Seed brown with large white aril."

46613. *FRAGARIA CHILOENSIS* (L.) Duchesne. Rosaceæ.

Strawberry.

"No. 26. Strawberries from the Guayaquil market. A very large strawberry which grows in the dry plains without irrigation. It ought to do well in Texas and southern California."

46596 to 46629—Continued.

46614. *OPERCULINA* sp. Convolvulaceæ.

"No. 28: 22115. A vine running over bushes about Guayaquil."

46615. *Gossypium* sp. Malvaceæ.

Cotton.

"No. 29: 22105. Wild cotton in swamps about Guayaquil. Also cultivated."

46616. *SIDA* sp. Malvaceæ.

"No. 30: 22172. *Sida* at Huigra; has pretty violet flowers."

46617. *CARDIOSPERMUM* sp. Sapindaceæ.

"No. 31: 22172. From Huigra. A vine."

46618. *CARDIOSPERMUM* sp. Sapindaceæ.

"No. 32. From Guayaquil."

46619. *ONOSERIS SPECIOSA* H. B. K. Asteraceæ.

"No. 33: 22125. A pretty asterlike plant from Huigra; flowers large, very beautiful."

46620. *HELIANTHUS* sp. Asteraceæ.

Sunflower.

"No. 34: 22231. From the mountains above Huigra. Altitude 6,000 feet."

46621. *IPOMOEA* sp. Convolvulaceæ.

Morning-glory.

"No. 35: 22104. Flowers small; on bushes about Guayaquil."

46622. *CUCURBITA FICIFOLIA* Bouche. Cucurbitaceæ.

"No. 37: 22223. *Tambo*. Resembles a small watermelon. Flesh white, sweetish; made into dulces and also eaten as a vegetable."

46623. *CARICA CANDAMARCENSIS* Hook. f. Papayaceæ.

"No. 40: 22354. From Ambato. Called *chamburo* in Ambato, but a different species from No. 20 sent in from Huigra as *chamburo*; fruit small."

46624. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

"No. 41: 22338. Avocado from Ambato; fruit brownish to black, but sometimes green or red, 2½ to 4 inches long; a fine fruit but small."

"This variety apparently belongs to the Mexican race. It will probably be hardy and should be tested in sections of the United States which are slightly too cold for avocados of the West Indian or Guatemalan races. It is probable that it will prove to be a small-fruited variety of rich flavor, as the Mexican race usually produces fruits of this character." (*Wilson Popenoe*.)

46625. *TROPAEOLUM TUBEROSUM* Ruiz and Pav. Tropæolaceæ.

Anyu.

"No. 47. Tubers of *Mushu* obtained in the markets of Ambato and Huigra."

46626. *PHASEOLUS* sp. Fabaceæ.

"No. 59. Leguminous vine; near Huigra."

46627 and 46628. *IPOMOEA* sp. Convolvulaceæ.

Morning-glory.

46627. "No. 60: 22299. A delicate vine."

46628. "No. 61: 22191. Tall vine; from Huigra."

46629. *PASSIFLORA SUBEROSA* L. Passifloraceæ.

"No. 62: 22249. Small greenish flowers and small purple fruit; near Huigra."

46630. ANNONA SENEGALENSIS Pers. Annonaceæ.

From Ibadan, Southern Nigeria, Africa. Presented by the Director of Agriculture. Received October 3, 1918.

"Abo (wild sop) seeds."

Annona senegalensis varies greatly in size from a low shrub to a tree 20 feet high. The leaves are coriaceous and the flowers are borne singly on decurved pedicels. The edible fruit is yellow or orange when ripe and from 1 to 2 inches in diameter. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 1, p. 16.)

See S. P. I. No. 38525 for previous introduction.

46631. SOLANUM QUITOENSE Lam. Solanaceæ. Naranjilla.

Plants grown at the Yarrow Plant Introduction Field Station, Rockville, Md., from seed received in June, 1917, from Dr. Frederic W. Goding, American consul general at Guayaquil, Ecuador. Numbered for convenience in distribution, October 31, 1918.

"The fruits of these plants are delicious for ices." (*Goding.*)

"A shrubby plant bearing fruits that resemble small oranges in size and color and possess a peculiar fragrance." (*Peter Bisset.*)

46632 and 46633. CHENOPodium NUTTALLIAE Safford. Chenopodiaceæ. Huauhtzontli.

From Mexico. Purchased through Mrs. Zelia Nuttall, Casa Alvarado, Coyacan, Mexico. Received October 5, 1918. Quoted notes by Mrs. Nuttall.

46632. "Black-seeded form from Xochimilco which the agriculturists there consider the best. It is of last year's crop, which is particularly prized. Several Indians told me that huauhtzontli was considered 'more nourishing than meat.' My cook prepares it for me as follows: She makes bunches of the inflorescence, ties and boils them in water and salt, then scrapes the green seeds off and shapes the mass like a small flat croquette, puts a small piece of cheese in it, dips the whole in batter made of egg and a little flour, and fries like croquettes. Sometimes she makes what looks like an omelet in the same way."

46633. "Yellow-seeded form. This was grown near Coyacan, by an old Indian woman."

For previous introduction, see S. P. I. No. 46311.

46634. DATURA FASTUOSA L. Solanaceæ. Datura.

From Calcutta, India. Presented by Mr. H. G. Carter, of the Indian Museum. Received October 4, 1918.

"Variety *alba*. So far as our inquiries go, there is no material difference in medicinal properties between the different varieties of *Datura fastuosa*." (*Carter.*)

An annual, 4 to 5 feet high, native to India. The ovate-lanceolate, wavy margined leaves are 7 to 8 inches long. The trumpetlike flowers, 7 inches long, have an angled, purple calyx, and the corolla is usually violet, but is white or nearly so in the variety *alba*. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 971.)

46635 to 46642.

From the Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser, Zamboanga. Received October 7, 1918. Quoted notes by Mr. Wester except as otherwise indicated.

46635. ARTOCARPUS ODORATISSIMA Blanco. Moraceæ. **Marang.**

"I might mention that after four years I have renewed my acquaintance with the *marang*, and I want to reiterate that it is the best fruit of the genus that I have eaten. Indeed, it is a very delicious fruit indeed."

For previous introduction, see S. P. I. No. 36256.

46636. CARISSA CARANDAS L. Apocynaceæ. **Natal plum.**

"A thorny shrub from India, with plumlike black fruits having semi-transparent subacid flesh of very good flavor. A very good fruit eaten out of hand, and it would probably make a good preserve. One of the best small fruits introduced into the Philippine Islands within recent years."

For previous introduction, see S. P. I. No. 41506.

46637. CITRUS sp. Rutaceæ.

"*Bankit*, from Jolo, Sulu."

46638. ERYTHRINA sp. Fabaceæ.

"A giant tree from Lamao, Mindanao, attaining a height of 50 feet and a trunk diameter of 5 to 6 feet. Sometimes planted as shade for coffee."

46639. FICUS sp. Moraceæ. **Fig.**

"Very ornamental, with drooping willowlike branches."

46640. HETEROSPATHE ELATA Scheff. Phœnicaceæ. **Palm.**

"A tall, unarmed palm, with a slender, straight stem and long pinnate leaves, growing in protected situations and where the rainfall is evenly distributed. It is one of the most attractive and graceful palms that I have seen, and from my experience with it at Lamao it will make a good plant for the conservatory, and possibly a good house palm."

46641. COLUBRINA ASIATICA (L.) Brongn. Rhamnaceæ.

"A glabrous shrub with alternate leaves and axillary clusters of small greenish flowers having a fleshy disk in the calyx tube, suggesting the genus *Euonymus* or *Ceanothus*.

"This plant is widely spread in Polynesia and is found in India, Ceylon, Java, Borneo, New Guinea, Australia, and southwestern Africa. In Samoa and in Fiji the leaves are used for washing. They form a lather in water like soap. The vernacular name in Fiji signifies 'much lather' or 'big foam.' The special use to which it is devoted in Samoa is the cleansing and bleaching of the white shaggy mats which the natives make of the fiber of an urticaceous plant, *Cypholophus macrocephalus*." (*Safford, Useful Plants of Guam*, p. 246.)

46642. TRICHOSANTHES QUINQUANGULATA A. Gray. Cucurbitaceæ.

"A climbing annual vine with globose, carmine-colored fruits somewhat larger than an apple. The fruits keep indefinitely and retain their color for many weeks."

46643 and 46644. NOTHOFAGUS spp. Fagaceæ.

From Tapanui, New Zealand. Presented by Mr. H. R. Wright, Avondale, Auckland. Received October 10, 1918.

46643. NOTHOFAGUS FUSCA (Hook. f.) Oerst.

Red beech.

A large New Zealand tree often reaching a height of 100 feet and having a trunk diameter of 12 feet. The leaves, about $1\frac{1}{2}$ inches long, are oblong-ovate with serrate margins. It is sparsely distributed throughout the islands in damp situations. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 133.*)

46644. NOTHOFAGUS MENZIESII (Hook. f.) Oerst.

Silver beech.

A large tree, up to 100 feet, with silvery bark. The shining, dark-green leaves, about half an inch long, are ovate with crenate margins. It is found on the subalpine slopes of the mountains. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 133.*)

46645. SALVIA HISPANICA L. Menthaceæ.

Chia.

From San Luis Potosi, Mexico. Procured by Mr. Cornelius Ferris, jr., American consul. Received October 8, 1918.

"This seed was obtained in the semitropical region of the State of San Luis Potosi and is known simply as *chia*. It is the kind used in making the drink called *chia*." (*Ferris.*)

46646. CITRUS NOBILIS Lour. Rutaceæ.

King orange.

From Kioto, Japan. Cuttings presented by Mr. H. Atherton Lee, Bureau of Plant Industry, United States Department of Agriculture. Received October 14, 1918.

"September 2, 1918. Bud sticks of the *Chu kaa* (Vermilion orange), a variety of *Citrus nobilis*. The fruits of the *Chu kaa* are smooth skinned, but easily peeled, as with the other mandarin varieties. The color is a light orange at the stem end, becoming a deeper orange, almost red, at the blossom end; flesh delicate with little or no rag; core very small. The shape is more nearly globose than that of most Mandarin varieties. The juice is as desirable in taste as that of any citrus fruit I have tasted. The fruit has few seeds, for the most part having no seeds or but one. One orange was found having three seeds. This variety is resistant to citrus canker. Should it be equally successful under conditions in the States as it is in Swatow it would easily rival the Washington navel, Valencia, and Satsuma in popularity." (*Lee.*)

46647. MERRILLIA CALOXYLON (Ridley) Swingle. Rutaceæ.

(*Murraya caloxylon* Ridley.)

Katinga.

From Manila, Philippine Islands. Fruits presented by Mr. E. D. Merrill, botanist, Bureau of Science. Received October 15, 1918.

A medium-sized tree with pale flaky bark; native to Siam. The compound leaves are made up of 13 oblanceolate leaflets on a winged rachis. The pale yellowish green flowers are followed by yellow citronlike fruits, 4 inches in diameter, with a thick skin and green, tasteless flesh. The tree is known as the katinga; it is famous in the Malay region for its beautiful wood, which is light yellow with dark brown streaks, fairly hard, and takes a good polish. (Adapted from *The Journal of the States Branch, Royal Asiatic Society, vol. 50, p. 113.*)

46648 to 46659.

From Ecuador. Collected by Dr. J. N. Rose, associate curator, United States National Herbarium. Received October 18, 1918. Quoted notes by Dr. Rose.

46648. *PASSIFLORA LIGULARIS* JUSS. Passifloraceæ. **Granadilla.**

"No. 1. *Granadilla*. Common in the market of Guayaquil. Fruit orange-colored with a long stem. There are many species here; this is one of the best."

46649. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ. **Barley.**

"No. 5. *Cebada*. Sold in the markets of Guayaquil. Also sold in cracked form. Said to have been brought from the highlands of Ecuador."

46650 to 46652. *PHASEOLUS VULGARIS* L. Fabaceæ. **Common bean.**

46650. "No. 6. *Chola* or *Frijoles colorados*. Brownish colored. From Guayaquil."

46651. "No. 7. *Caballero*. White. From Guayaquil."

46652. "No. 8. *Bayo*. Light gray. From Guayaquil."

46653. *ZEA MAYS* L. Poaceæ. **Corn.**

"No. 10. Three ears of corn from Guayaquil."

46654. *AMARANTHUS* sp. Amaranthaceæ. **Amaranth.**

"No. 11. Flowers, leaves, and stem dark purple. From Huigra."

46655 to 46657. *SOLANUM TUBEROSUM* L. Solanaceæ. **Potato.**

46655. "No. 12. Yellow potato."

46656. "No. 13. White skin; called *blanca*. From Guayaquil."

46657. "No. 14. Brown skin; called *leona* or *leona blanca*. From Guayaquil."

46658. *CHENOPODIUM QUINOA* Willd. Chenopodiaceæ. **Quinoa.**

"No. 26. A large pigweed extensively cultivated in the high plateaus of South America. The seeds are eaten, prepared in various ways. Quinoa presents many color variations in the plants, as well as in the seeds, especially in the direction of reds and purples. The colored seeds are used almost exclusively for making *chicha*, or native beer. The white seeds are preferred for eating. A possibility of utilizing the quinoa in the United States lies in its use as a breakfast food. Some pronounce it as good as oatmeal, and one resident Scotchman even insisted that it was better! From a crop standpoint, too, the plant appears rather promising, being very vigorous and productive. It is of erect habit, has a strong central stalk, and forms compact heads, heavy with seeds. There is no reason why it should not be gathered and thrashed by machinery." (*O. F. Cook.*)

For previous introduction, see S. P. I. No. 41340.

46659. *OXALIS TUBEROSA* Molina. Oxalidaceæ. **Oca.**

"No. 19. *Oca*. A plant related to our common sheep sorrel, widely cultivated in Peru and Bolivia for the sake of its fleshy rootstocks, which are an important article of food. Ocas are eaten raw, as well as cooked, and are also frozen and dried. Raw ocas, when first dug, have a distinctly acid taste, like sheep sorrel, but this is lost after the tubers have been exposed to the sun. The plant attains a height of 1 foot or more and has the general appearance of a large sheep sorrel. The flowers are yellow and the leaflets are folded at night or in wet weather, the same

46648 to 46659—Continued.

as in the sheep sorrel. The varieties are numerous, though much fewer than in the case of the potato. The tubers are very tender, crisp, and juicy. In form some are nearly cylindrical, while others are slender at the base and strongly thickened at the end. The colors vary from white or light pink through darker pinks or yellows to deep purplish red. In addition to the pleasing coloration, the surface of the tubers is smooth and clear, so that the general appearance is very attractive. If the taste should prove acceptable, ocas might become very popular for salads and pickles. The nature and habits of the plant indicate that it may be adapted to acid soil, which would be a distinct advantage in some parts of the United States." (*O. F. Cook.*)

For previous introduction, see S. P. I. No. 41168.

46660. LILIUM COLUMBIANUM Hanson. Liliaceæ. Lily.

From Bellingham, Wash. Collected by Dr. David Griffiths, Bureau of Plant Industry. Received October 18, 1918.

"A valuable native lily of the northern Pacific coast region, growing under very variable conditions from northern California to far into Canada. Locally it is called tiger lily, but it is very different and can be readily distinguished from that species by an entire lack of stem bulblets. The species produces abundant seed, which germinates readily. This seed was collected near Bellingham, Wash., in September, 1918." (*Griffiths.*)

46661. CASIMIROA EDULIS La Llave. Rutaceæ. White sapote.

From Altadena, Calif. Purchased from Mr. F. O. Popenoe, West India Gardens. Received October 19, 1918.

A large tree with palmately compound leaves of three to seven leaflets and small greenish yellow flowers. The fruit, about the size of an orange, is greenish yellow with a thick epicarp and usually has five seeds about an inch long. The fruit has a delicious flavor, somewhat suggesting that of a peach. It is used in Mexico as an aid in inducing sleep. (Adapted from *Bailey, Standard Cyclo-pedia of Horticulture, vol. 2, p. 680.*)

46662 to 46693.

From China, Japan, and Africa. Presented by Rev. G. D. Schlosser, Honan, China. Received October 1, 1918. Quoted notes by Mr. Schlosser.

46662 and 46663. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.

46662. "From Chikung, China."

46663. "From South Honan, China."

For previous introduction, see S. P. I., No. 45588.

46664. ALLIUM CEPA L. Liliaceæ.

"Onion."

46665. ALLIUM sp. Liliaceæ.

Onion.

"Chin ts'ai."

46666 to 46668. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ.

Pai ts'ai.

46666. "Chinese small or leaf cabbage from Honan, China."

46667. "Large long-headed Chinese cabbage seed from Honan, China; collected in the spring of 1918."

46668. "Chinese cabbage seed from Honan, China."

46662 to 46693—Continued.

46669. *CARTHAMUS TINCTORIUS* L. Asteraceæ.

"Chinese red dye plant. Also Chinese medicine; probably red saffron."

46670 to 46674. *CUCUMIS MELO* L. Cucurbitaceæ.

Muskmelon.

"Excellent varieties of Chinese muskmelon."

46675. *EREMOCHLOA OPHIUROIDES* (Munro) Hack. Poaceæ.

Grass.

"Grass seed from Honan, China."

46676 to 46678. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

46676. "White *kaoliang*. A tall grain similar to kafir corn."

46677. "Red *kaoliang*. From Honan, China."

46678. A red variety, slightly darker than S. P. I. No. 46677.

46679. *PHASEOLUS ANGULARIS* (Willd.) W. F. Wight. Fabaceæ.

Adsuki bean.

"A short, thick, red variety of the adsuki bean."

46680. *PHASEOLUS AUREUS* Roxb. Fabaceæ.

Mung bean.

"A green variety of the mung bean, or green gram."

46681. *PHYSALIS PERUVIANA* L. Solanaceæ.

Poha.

"Natal gooseberry or ground cherry; tart, but excellent for sauce. From Natal, South Africa."

46682. *PISUM SATIVUM* L. Fabaceæ.

Garden pea.

"Japanese peas. Cargoes of these are shipped to Seattle."

46683. *POLYGONUM TINCTORIUM* Lour. Polygonaceæ.

"*Lao lan*. Blue dye plant from Honan, China."

46684. *PYRUS* sp. Malaceæ.

Pear.

"Wild pear seed; *tang li*; from Honan and northern Hupeh, China. Blight resistant."

46685. *RICINUS COMMUNIS* L. Euphorbiaceæ.

Castor-bean.

"Castor-bean seed from Honan, China."

46686. *SESAMUM ORIENTALE* L. Pedaliaceæ.

Sesame.

(*S. indicum* L.)

"A black-seeded variety of Chinese sesame."

46687 to 46691. *SOJA MAX* (L.) Piper. Fabaceæ.

Soy bean.

46687. "Seeds flat, light yellow."

46688. "Seeds round, green."

46689. "Seeds small, flat, yellowish green."

46690. "Seeds small, flat, black."

46691. "Seeds large, round, black. The Japanese export much of this variety to Seattle."

46692 and 46693. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

"Used by the Chinese as green string beans."

46692. "A small white variety of cowpea."

46693. "A mixture of several dark-colored varieties."

46694. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ.**Japanese apricot.**

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received October 19, 1918.

"The flesh of the fruits dissolved in tea is used for washing inflamed eyelids or when eyes get gummy; the acidity kills microbacteria." (*Iida.*)

"Although every American artist who visits Japan in the early spring comes away with the keenest appreciation of the remarkable beauty and picturesque character of the so-called 'flowering plums' of Japan, few of these artists appear to know anything about the fruit which is borne by these beautiful flowering trees. These fruits, which are properly classed by botanists with the apricots instead of with the plums, constitute a most unique food of the Japanese. Though sometimes eaten fresh, much as we eat our native American plums, they are usually pickled in brine and colored with leaves of the perilla plant and packed in boxes or other receptacles for household use. Great quantities of these pickled mumes are consumed in Japan. Their use is so common that they formed an important part of the army ration in the Russo-Japanese war, and it is said that they were often depended on to quench the thirst of the soldiers when on long marches. One's first impression of these Japanese pickles may be properly compared with one's first impression of the Spanish pickled green olive, which has now become so popular. Eaten with meats, they furnish an entirely new and appetizing flavor, one which, perhaps, is destined to become popular in America, certainly one which deserves our investigation. The trees are very hardy, and there are a great many varieties; when in flower they are very beautiful. Our horticulturists should study them." (*David Fairchild.*)

For an illustration of the flowers of the "mume," see Plate I.

46695. BAILLONELLA TOXISPERMA Pierre. Sapotaceæ. Djave.

From Africa. Presented by Dr. F. Heim, Paris, France. Received October 19, 1918.

"Seeds from the Kongo, Africa; they are introduced into Europe for the first time." (*Heim.*)

A tree often 150 feet high, with a trunk diameter of 6 feet, and without branches for 75 to 90 feet. The wood is red, very compact, but easily worked. It is exported to Europe, where it is used for making railway coaches. The deeply ridged bark when wounded yields a glutinous white latex. The fruits are globular, about 3 inches in diameter, and contain one to three seeds from which the natives extract a fat. (Adapted from *Chevalier, Les Vegetaux Utiles de l'Afrique Tropicale Française*, vol. 9, p. 242.)

46696. JACARATIA MEXICANA A. DC. Papayaceæ. Bonete.

From Yucatan. Presented by Dr. Mario Calvino, director, Estacion Experimental Agronomica, Santiago de las Vegas, Cuba. Received October 22, 1918.

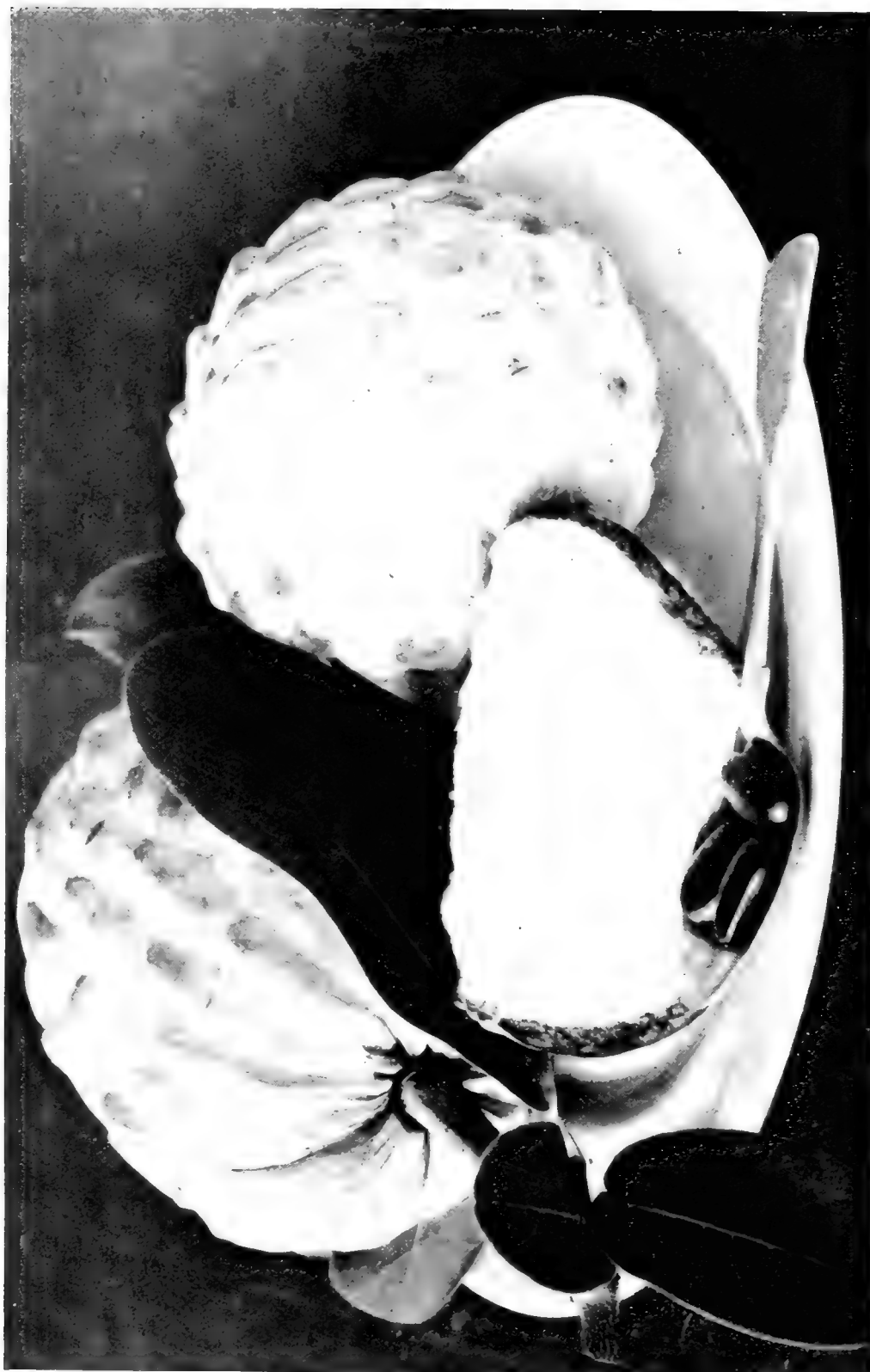
"Seeds of bonete from Yucatan. It produces edible fruits of a shape and taste much like *Carica papaya*. The bonete plant lives longer than the *papaya*." (*Calvino.*)

"A remarkable tree belonging to the same family as *Carica papaya*, but growing to a much greater size. The fruit, which is commonly called 'bonete' in



A FLOWERING BRANCH OF THE JAPANESE APRICOT. (PRUNUS MUME SIEB. AND ZUCC., S. P. I. No. 46694.)

The flowering mume of Japan, often called erroneously the "flowering plum," is a distinct oriental species of apricot. It is considered by many Japanese artists more beautiful even than the flowering cherry, having a picturesque quality in its branching habit which makes it peculiarly adapted for portrayal on screens, etc. It flowers very early, and its fragrant blooms are often caught by late snowfalls. Its fruits are extremely acid and are pickled in Japan and candied in China. They form an important part of the Japanese soldier's ration and when served with meats are an appetizing relish. The tree is hardy, appears to be resistant to crown-gall and to the American peach borer, and deserves study as a stock. (Photographed, somewhat enlarged, by E. L. Crandall at Dr. Fairchild's place, "In the Woods," North Chevy Chase, Md., March 26, 1921; P2688JFS.)



FRUITS OF THE ILAMA, ONE OF THE CUSTARD-APPLES. (*ANNONA DIVERSIFOLIA* SAFFORD, S. P. I. No. 46781.)

The ilama, or papance, as it is called in the State of Chiapas, can be termed the cherimoya of the tropical lowlands, for it is almost equal to the cherimoya in character and quality, yet it succeeds in the lowlands where the cherimoya can not be grown. (Photographed by Wilson Popenoe, Tapachula, Chiapas, Mexico, July 2, 1918; P17151 FS.)

tropical Mexico, is of a peculiar shape; oblong, pentagonal, five celled, containing a milky pulp. It is somewhat sweet and edible, in many places being prepared with sugar in the form of conserves. The leaves are compound and digitate, composed of seven distinct acute lobes." (W. E. Safford.)

46697. LIVISTONA JENKINSIANA Griffith. *Phœnicaceæ*. **Palm.**

From Buitenzorg, Java. Presented by the director of the Botanic Garden.
Received October 25, 1918.

Seeds of an East Indian palm, 20 to 30 feet tall, with a thick, round crown. The leaves are used for covering tops of boats and umbrellas.

For previous introduction and description, see S. P. I. No. 45591.

46698 to 46703.

From Jamaica Plain, Mass. Seeds collected at the Arnold Arboretum by Dr. Walter Van Fleet, of the Bureau of Plant Industry. Received October 28, 1918. Quoted notes by Dr. Van Fleet, except as otherwise stated.

46698. × MALUS ARNOLDIANA Rehder. *Malaceæ*. **Apple.**

"Hybrid of *Malus pulcherrima*, grown at the Arnold Arboretum; vigorous and very fruitful. May be useful as a stock for dwarfing commercial varieties of apples and for variety breeding."

Attention has been called to the hybrid crab apple, *Malus cerasifera*. This plant is probably one of the parents of another hybrid which sprang up spontaneously in the Arboretum many years ago and has been called *M. arnoldiana*. The other parent is probably *M. floribunda* [*M. pulcherrima*], itself believed to be a hybrid which originated in China. If this view of the origin of *M. arnoldiana* is correct, it is the offspring of two hybrids of different parentage and is a good illustration of what can be obtained by crossing and recrossing the crab apples. It is a low, broad, bushy tree with long, arching upper branches which are raised well above the general head of the plant and are wonderful objects when clothed from end to end with flowers and the blue sky is seen between. The flower buds, like those of *M. floribunda*, are of deep rose color and the petals, after the flowers open, gradually turn from rose color to white. The flowers, however, are as large as those of *M. cerasifera*, or nearly twice as large as those of *M. floribunda*, and the red fruits are intermediate in size between those of the parents. (Adapted from *Arnold Arboretum Bulletin of Popular Information*, May 16, 1918.)

46699 and 46700. MALUS PRUNIFOLIA RINKI (Koidz.) Rehder. *Malaceæ*. **Apple.**

46699. "Fruits from the best trees of this variety in the Arboretum. Fruits are of quite large size and good quality. Tree healthy and vigorous. For breeding and stock trials."

46700. "Handsome variety formerly considered a form of the Siberian crab, *M. baccata*, but considered by Prof. Sargent as being much nearer to *M. prunifolia rinki*. Good-sized fruits of fine quality. For breeding and stock trials."

46701. MALUS TRANSITORIA TORINGOIDES Rehder. *Malaceæ*. **Apple.**

"A large and vigorous variety of *M. transitoria*, with good-sized astringent fruits. For breeding purposes."

46698 to 46703—Continued.

46702. *PYRUS SEROTINA* Rehder. Malaceæ.

Pear.

"The typical form of the species usually known as *P. chinensis*. Parent of the varieties *Golden Russet*, Chinese sand pear, *LeConte*, and others. Useful as a resistant stock and for breeding."

46703. *PYRUS SERBULATA* Rehder. Malaceæ.

Pear.

"Tree grown from seeds received from China. Vigorous and possibly resistant to blight. Fruits small, late ripening, and barely edible. Of possible value as a stock for nonresistant pears and for breeding new varieties."

46704 to 46707.

From Los Banos, Philippine Islands. Presented by Mr. C. F. Baker, dean, College of Agriculture. Received October 29, 1918. Quoted notes by Mr. Baker.

46704. *ANTIDESMA BUNIUS* (L.) Spreng. Euphorbiaceæ.

"*Bignay*. Collected on the college farm."

A small evergreen tree, found in India, the Malay Archipelago, and China, with glabrous leaves and pubescent spikes of small flowers. The very juicy red fruits turn black when ripe, and are about a third of an inch in diameter. The bark of this tree yields a fiber from which rope is made, and the leaves are used as a remedy for snake bites. The wood, when immersed in water, becomes black and as heavy as iron. The fruits are subacid in taste and are used for preserving. (Adapted from *Brandis, Indian Trees*, p. 56½, and from *Lindley, Treasury of Botany*, vol. 1, p. 75.)

For previous introduction, see S. P. I. No. 43544.

46705. *CORDIA BLANCOI* Vidal. Boraginaceæ.

Anonang.

"*Anonang*. Collected on the college farm."

A medium-sized tree generally with a short and irregular trunk. The wood is soft and light and easily worked. It is clear yellow when first cut, changing to grayish brown. While not very durable, it is not attacked by pinhole beetles and is useful for posts and in light construction. The bast is used for making ropes. (Adapted from *Schneider, Commercial Woods of the Philippines*, p. 205.)

46706. *PREMNA CUMINGIANA* Schauer. Verbenaceæ.

"*Maguilio*. Collected on the college farm."

A Philippine shrub with stellate-pubescent, ovate, cordate leaves 9 inches long and ample pyramidal panicles of small flowers followed by fruits the size of a pea. (Adapted from *DeCandolle, Prodrromus*, vol. 11, p. 634.)

46707. *QUERCUS BENNETTII* Miquel. Fagaceæ.

Oak.

"*Cateban*. Collected on Mount Maquilang."

One of the largest of the Philippine oaks, reaching a diameter of more than 2 feet. The wood is moderately hard, heavy, pale yellowish brown, and has a fine texture. It seasons well if carefully stacked, but otherwise it is liable to split and warp. Useful for posts, beams, joists, rafters, and tool handles. (Adapted from *Schneider, Commercial Woods of the Philippines*, p. 98.)

46708 to 46710.

From Bahia, Brazil. Presented by Mr. H. M. Curran. Received October 30, 1918. Quoted notes by Mr. Curran.

46708. SYAGRUS CORONATA (Mart.) Becc. Phœnicaceæ. **Palm.**
(*Cocos coronata* Mart.)

"Seeds of *Licori* palm, Jequie, Bahia, Brazil, September, 1918. A small, ornamental palm of dry, cool highlands. It yields edible kernels and oil in immense quantities."

46709. FEVILLEA sp. Cucurbitaceæ.

"Seeds of *andiroba* used for soap making; Rio Grungugy, Bahia, Brazil, September, 1918."

46710. ZEPHYRANTHES sp. Amaryllidaceæ.

"Jequie, Bahia, September, 1918. Bulbs of an ornamental pink flower, from 12 to 14 inches high. Flowers 4 to 6 inches long, four or five at apex of scape. Wild in dry, cool highlands in good woods mold."

46711. BERBERIS PRUINOSA Franch. Berberidaceæ. **Barberry.**

From San Rafael, Calif. Presented by Mr. R. H. Menzies. Received October 31, 1918.

"This barberry is one of the handsomest of the seventy-odd species I have under cultivation. It is the first to flower, the large clear yellow flowers being very showy. The white, powdery berries are borne profusely and are carried through the winter, a few remaining on the plant along with the next season's flowers. While an evergreen in California, it will probably be deciduous in the East; the foliage becomes very handsomely colored in the fall. I know of no barberry that puts on a greater growth almost from the start; my plant throws out new shoots each year all the way from 5 to 6½ feet from the base." (*Menzies.*)

46712. ARTEMISIA CINA Berg. Asteraceæ. **Wormseed.**

Grown from S. P. I. No. 42791 at the Plant Introduction Field Station, Chico, Calif. Received November 4, 1918.

Numbered for convenience in recording distribution.

The plant is a low and straggly undershrub, with erect branches, abounding in the deserts of Turkestan, where all the drug *santonica* is collected in July and August by natives. The drug is composed of the dried, unexpanded flower heads and it forms a greenish brown, glossy mass, having a strong, somewhat camphoraceous odor and a bitter taste. It is used as an anthelmintic, especially for roundworms.

For previous introduction, see S. P. I. Nos. 42682 and 42791.

46713. CHENOPodium NUTTALLIAE Safford. Chenopodiaceæ.
Huauhtzontli.

From City of Mexico, Mexico. Purchased by Mrs. Zelia Nuttall. Received October 31, 1918.

"Seeds of the black variety which the agriculturists of Xochimilco consider the best." (*Mrs. Nuttall.*)

For previous introduction, see S. P. I. No. 46632.

46714 to 46716.

From Pretoria, South Africa. Presented by Mr. E. Percy Phillips, for the chief of the division of botany, Department of Agriculture. Received November 5, 1918. Quoted notes by Mr. Phillips.

46714 and 46715. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon.

46714. "A. Sweet variety."

46715. "B. The wild melon and may be a bitter variety."

46716. *LAGENARIA VULGARIS* Seringe. Cucurbitaceæ.

Gourd.

"C. The Kafir melon."

46717. GOSSYPIUM NANKING Meyen. Malvaceæ.

Cotton.

From Honan, China. Presented by Mr. G. D. Schlosser. Received October 1, 1918.

"The Chinese cotton is generally recognized as being inferior to the American. Whether it may have some superiority in the matter of adaptability to poorer soils I am unable to say. My friends here say they do not plant cotton on land that will grow anything else. The fiber is used for spinning in the hand fashion. The native cloth is all woven of this cotton." (Rev. H. W. White.)

For previous introduction, see S. P. I. Nos. 33798 and 33799.

46718. PYRUS sp. Malaceæ.

Pear.

From China. Seeds taken from fruits collected by Mr. Frank N. Meyer and forwarded to the Office of Foreign Seed and Plant Introduction after his death, without any notes. Received October 5, 1918.

46719. SCHRANKIA LEPTOCARPA DC. Mimosaceæ.

From Bahia, Brazil. Presented by Sr. V. A. Argollo Ferrão. Received November 5, 1918.

"Seeds of a wild sensitive plant that might be good for pasture for goats and sheep. It is a strong-growing small shrub, with the spines very much reduced, as compared with those of the common sensitive plant. The seeds are protected by a spiny fruit. The plant is not easily found, as the cattle eat it back closely. It grows in good soil and is found in low ground near rivers and small streams." (Argollo Ferrão.)

46720. ZIZIPHUS MAURITIANA Lam. Rhamnaceæ. **Indian jujube.**
(*Z. jujuba* Lam. not Mill.)

From Reunion Island. Presented by Mr. G. Regnard, Port Louis, Mauritius. Received November 5, 1918.

"Ziziphus from Reunion Island. This jujube is very sweet and is highly prized." (Regnard.)

For previous introductions, see S. P. I. Nos. 45625 to 45658.

46721 to 46724.

From Medellin, Colombia. Presented by Mr. W. O. Wolcott. Received November 8, 1918. Quoted notes by Mr. Wolcott.

46721 to 46724—Continued.**46721.** *CEREUS* sp. Cactaceæ.**Night-blooming cereus.**

"The flat joints are from a species of night-blooming cereus which has an immense blood-red flower the size of a saucer. It opens only at night; the plant climbs on walls, or anything."

46722 and 46723. *CEREUS* sp. Cactaceæ.**Pitalla.**

"The seeds and the 3-cornered joints are from a cactus called *pitalla* (pronounced pea-tah-ya). The fruit grows as large as a good-sized potato and is covered with warts about one-fourth of an inch high. The inside pulp has a wonderful flavor and is very fine eating."

46722. Cuttings.**46723.** Seeds.**46724.** *PERSEA AMERICANA* Mill. Lauraceæ.**Avocado.***(P. gratissima* Gaertn. f.)

"Seeds from some very large and fine *aguacates*."

46725. BROSIMUM ALICASTRUM Swartz. Moraceæ. Breadnut tree.

From Cuba. Presented by Dr. Mario Calvino, director of the Agricultural Experiment Station, Santiago de las Vegas. Received November 8, 1918.

"Seeds of the *ramon de mejico*. It is a fine shade tree; and it is also an economic plant, for its leaves are eaten by cattle and its seeds are eaten readily by pigs."

For previous introduction, see S. P. I. No. 41880.

46726. CUCUMIS MELO L. Cucurbitaceæ.**Muskmelon.**

Grown at the Plant Introduction Field Station, Chico, Calif. Numbered for convenience in recording distribution. Received November 8, 1918.

"Seeds of an Armenian melon. It is a good bearer, and the fruits weigh from 15 to 20 pounds. The skin is rough, and greenish yellow in color. The flesh is white, solid, and firm, and very sweet. No doubt it would make a good keeper for late use." (*R. L. Beagles.*)

46727. MILLETTIA PISCIDIA (Roxb.) Wight. Fabaceæ.

From India. Presented by Mr. H. G. Carter, economic botanist of the Botanical Survey of India, Indian Museum, Calcutta. Received November 11, 1918.

"Pods and seeds of *Sohrumthein* collected by the Agricultural Inspector of Dhasi and Jaintia and Garo Hills, Shillong, Assam." (*Carter.*)

This woody climber, with whitish branchlets and odd-pinnate leaves, is a native of the forests of India, growing up to an altitude of 4,000 feet. The ovate-oblong, coriaceous leaflets are 3 to 4 inches long, and the snow-white flowers are borne in copious, laxly flowered racemes. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 107.)

46728 and 46729.

From Peking, China. Presented by Dr. Yamei Kin, who obtained them from Mr. H. L. Yang, Peking University. Received November 12, 1918. Quoted notes by Mrs. Kin.

46728. *CUCUMIS MELO* L. Cucurbitaceæ.**Muskmelon.**

"Seeds of a small white melon that is very prolific and has a fine-textured flesh, though not so highly flavored as the Honey Dew."

46728 and 46729—Continued.**46729.** DOLICHOS LABLAB L. Fabaceæ.

"Seeds of the Manchurian green bean, which goes by the name of 'old woman's ear,' probably because it is very much broader and flatter than the usual string bean. It is noted for its late-maturing qualities, not being ready till the latter part of August and getting better with the cool autumn till the hard frost kills it. It also makes a delicious salt pickle and I imagine might be good for the salt-preserving method advocated by the United States Department of Agriculture. The bean itself is also eaten, but they say it is better green with the pod, like a string bean."

46730 and 46731.

From Tucuman, Argentina. Presented by Mr. E. F. Schultz, horticulturist, Agricultural Experiment Station. Received November 13, 1918.

46730. SOLANUM sp. Solanaceæ.**Potato.**

"Tubers of the *oca* wild potato. Although I do not think that this potato will be able to compete with the common cultivated potato, it may prove useful in some places, such as the high mountain ranges in California, as well as some parts of the Hawaiian Islands and the Philippines." (*Schultz.*)

46731. TILLANDSIA sp. Bromeliaceæ.

"A small package of seed of one of the largest of the local tillandsias. I obtained them in the forest about 50 kilometers to the northeast of Tucuman." (*Schultz.*)

46732 to 46740.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received November 13, 1918. Quoted notes by Mr. Wester.

46732. CITRUS MIARAY Wester. Rutaceæ.**Miaray.**

"With its willowy, slender, drooping branches and dense crown of dark-green foliage, the *miaray* is an exceedingly handsome ornamental tree. The fruit is about the size of a lime, usually growing singly in the axils of the leaves. It is pleasantly acid and may be used like the lime. The clean, vigorous growth of the tree indicates that it is likely to prove a desirable stock for other cultivated varieties of citrus fruits."

46733. CITRUS WEBBERII Wester. Rutaceæ.**Alsem.**

"*Calpi.* A shrubby tree with small, sharp spines. It has oblong-ovate, shining, dark-green leaves and solitary, sweet-scented, white flowers. The oblate fruits, 2 inches long by 2½ inches wide, are lemon yellow and have a thin skin, often loose like a mandarin orange. The flesh is whitish to grayish, very juicy and aromatic, with less rag than perhaps any other citrus fruit ever examined by the writer. The trees have a long flowering season, as fruits are offered in Manila throughout the summer to late in autumn."

46734. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ. **Ma-yuen.**

"*Adlay.* An edible variety of Job's-tears, cultivated in Mindanao."

46735. CROTALARIA sp. Fabaceæ.

"An annual plant up to 75 centimeters tall, with curious, rather attractive sepals that persist for many weeks. An interesting subject for a

46732 to 46740—Continued.

plant breeder of ornamentals. Native to Mindanao at an altitude of 400 to 700 meters."

46736. FICUS sp. Moraceæ.

"*Kalapat*. A small tree, used for live fence posts in Bukidnon, Mindanao, at an altitude of 400 to 700 meters. The fruits, which are bright red and about the size of small cherries, are produced in great profusion in the axils of the leaves and remain on the tree a long time, making this a very handsome ornamental. Likely to thrive in the very mild regions of the United States."

46737. IPOMOEA NYMPHAEFOLIA Blume. Convolvulaceæ. Morning-glory.

"*Burakan*. A perennial, climbing vine of vigorous growth which is bronze colored when young. It has very large leaves, sometimes exceeding 20 centimeters in width, and white flowers. The vine is used for basketry and in southern Florida would make a good ornamental. It is a native of Mindanao up to an altitude of 650 meters."

46738. ORANIA PALINDAN (Blanco) Merr. Phœnicaceæ. Palm.

"*Banga*. A tall, unarmed palm, native to the interior of Bukidnon, Mindanao, growing at altitudes ranging from 300 to sometimes exceeding 500 meters. The trunk is straight and remarkably uniform in diameter, this rarely exceeding 18 centimeters. The leaves are pinnate and silvery beneath. The trunk of the mature palm is straight grained, easily split, and durable, and is used by the natives in making floors, fences, etc. An attractive ornamental."

46739. TRICHOSANTHES sp. Cucurbitaceæ.

"No. 1. A cucurbitaceous climbing vine with attractive foliage and roundish oblong fruits somewhat larger than a goose egg. The bright-red color of the fruits is retained for several weeks and is highly decorative. Found at an altitude of about 600 meters in the interior of Mindanao."

46740. TRICHOSANTHES sp. Cucurbitaceæ.

"No. 2. A cucurbitaceous climbing vine with attractive white flowers and oblong, orange-red fruits about 5 centimeters long. Native to the interior of Mindanao."

46741. AMYGDALUS MICROPHYLLA H. B. K. Amygdalaceæ.

(*Prunus microphylla* Hemsl.)

Mexican almond.

From Indio, Calif. Fruits collected by Prof. S. C. Mason at the Indio Date Garden, grown from S. P. I. No. 39295. Received November 14, 1918.

The Mexican almond, found in the high mountain regions of Mexico, is a low, branching shrub with slender twigs without thorns. The leaves, usually less than 1 inch long, are narrowly elliptical to broadly lanceolate with crenate margins. The minute flowers, appearing before or with the leaves, are followed by densely rusty-pubescent oval fruits about half an inch long. The fruits are practically without flesh, and the thin dry skin splits open, exposing the stone. (Adapted from *Mason, Journal of Agricultural Research*, vol. 1, p. 175.)

46742 and 46743.

From Para, Brazil. Presented by Sr. J. Simao da Costa. Received November 14, 1918. Quoted notes by Sr. da Costa.

46742. *CECROPIA PALMATA* Willd. Moraceæ.

Yaruma.

"Seeds of what is called the trumpet tree, because it is hollow. It is a chronic harbor for ants and all sorts of pernicious insects. No experiments have been made as to the strength of the fiber which the bark contains."

46743. *EUTERPE OLERACEA* Mart. Phœnicaceæ.

Assahy.

"Seeds of a graceful, ornamental palm. The fruits contain hardly any oil and are made into a beverage and also into ice cream."

46744. ENTEROLOBIUM sp. Mimosaceæ.

From Bahia, Brazil. Presented by Mr. H. M. Curran. Received November 14, 1918.

"Seeds of a species of *Enterolobium* much like *E. saman*, but from dry regions. It is a handsome umbrella-shaped shade tree for Texas and California." (*Curran.*)

46745 to 46748. PYRUS spp. Malaceæ.

Pear.

From Jamaica Plain, Mass. Fruits collected at the Arnold Arboretum by Dr. W. Van Fleet, of the United States Department of Agriculture. Received November 15, 1918. Quoted notes by Dr. Van Fleet.

46745 to 46747. *PYRUS CALLERYANA* Decaisne.

46745. "Wilson No. 556a; pubescent form."

46746. "Wilson No. 556a; Bussey Hill."

46747. "Wilson No. 556a."

46748. *PYRUS SERRULATA* Rehder.

This species seems to be most closely related to *Pyrus serotina* Rehder. It differs, however, in its serrulate, generally broader leaves and in the smaller flowers with usually three or four styles and shorter petals, and in the smaller fruits. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 264.)

46749 to 46752.

From New Zealand. Presented by Mr. J. W. Poynton, Palmerston North. Received November 15, 1918. Quoted notes by Mr. Poynton.

46749. *ENTELEA ARBORESCENS* R. Br. Tiliaceæ.

New Zealand cork.

"Seeds of the *whaw* tree, the wood of which is but little more than half the weight of cork. Its distribution is very limited, as it is found only in isolated localities in the North Island and in one small area in the South Island. The seed vessels are very tough and are entirely surrounded by sharp needlelike spines which keep off birds and insects. The tree is very pretty, with a large, maplelike leaf and a pretty white flower. The leaves are evergreen. The tree grows to a height of 25 feet. It does not stand severe frosts, so should be sown only in the Southern States."

46749 to 46752—Continued.

46750 to 46752. PHORMIUM TENAX Forst. Liliaceæ. **New Zealand flax.**

"This seed is from a place called Wairoa, on the east coast of the North Island. It was collected for me by the manager of the largest flax mill there. Careful accounts were kept of the yield per ton of green leaf, and this seed is from the best plants, so it is of a fiber-producing strain."

46750. "From virgin plants not previously cut."

46751. "From plants after one cutting."

46752. "From plants cut more than once."

46753 to 46760.

From Montevideo, Uruguay. Presented by Sr. R. S. Silveira, technologist of the Estacion Agronomica, Montevideo. Received November 16, 1918. Quoted notes by Sr. Silveira.

46753 to 46756. ARACHIS HYPOGAEA L. Fabaceæ. **Peanut.**

46753. "Mani, variety *Brasil*."

46754. "Mani, variety *Brasil*."

46755. "Mani, variety *Paraguay*."

46756. "Mani, variety *Uruguay*."

46757 and 46758. HELIANTHUS ANNUUS L. Asteraceæ. **Sunflower.**

46757. "Variety *Argentina*." **46758.** "Variety *del Pais*."

46759 and 46760. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor-bean**

46759. "Variety *sanguineus*." **46760.** "Variety *communis*."

46761. CARICA sp. Papayaceæ. **Papaya.**

From Colombia. Presented by Dr. Carlos Urueta, minister of agriculture, Bogota. Received November 19, 1918.

"A wild variety of papaw from the tropical parts of Colombia." (*Urueta*.)

Judging from the seeds, this is the same species as that obtained by Mr. O. F. Cook at Ollantaytambo, Peru. See S. P. I. No. 41339.

46762. LYSILOMA SABICU Benth. Mimosaceæ. **Sabicu.**

From Santiago de las Vegas, Cuba. Presented by Dr. Mario Calvino, director, Agricultural Experiment Station. Received November 22, 1918.

The *sabicu* is a Cuban tree with twice-pinnate leaves composed of small, obliquely obovate leaflets. The flowers are in small, globular heads and the fruits are thin, flat pods. The tree is of great value for its dark-colored wood, which is very heavy and extremely hard and durable, making it valuable in ship-building. (Adapted from *Lindley, Treasury of Botany*, p. 704.)

46763. RHODODENDRON sp. Ericaceæ. **Rhododendron.**

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received November 25, 1918.

Seeds of an apparently new species of *Rhododendron* collected by Mr. Forrest (No. 15977).

46764. CORYNOCARPUS LAEVIGATA Forst. Corynocarpaceæ.**Karaka.**

From Honolulu, Hawaii. Presented by Mr. C. S. Judd, Superintendent of Forestry, Board of Commissioners of Agriculture and Forestry. Received November 25, 1918.

"Seeds of the *karaka* tree of New Zealand. This tree was introduced into these islands in 1878, when Mr. Francis Sinclair sent the seed of it from Auckland to Mrs. Valdemar Knudsen, who planted it at Halemanu, Kauai, Hawaii, at an altitude of 3,500 feet. The tree has thrived and forms a dense forest cover. It is considered a valuable addition to our list of water-conservation forest trees. The tree is not very long lived, but it perpetuates itself by abundant reproduction. The wood is soft and the foliage is relished by stock." (Judd.)

46765. RUBUS sp. Rosaceæ.**Blackberry.**

From San Lorenzo, Colombia. Presented by Mr. M. T. Dawe. Received November 11, 1918.

"I am sending you to-day seeds of a large fruiting blackberry which grows at about 3,300 meters altitude on the Central Cordillera." (Dawe.)

Received as *R. bogotensis*, but it seems to be a different species.

46766 and 46767. TRITICUM spp. Poaceæ.**Wheat.**

From Johannesburg, South Africa. Purchased from the Agricultural Supply Association through Mr. J. Burt Davy. Received November 28, 1918. Quoted notes by Mr. Davy.

"I have succeeded in obtaining in the Calvinia division of the Cape Province some very nice samples of two breeds of wheat, which have been grown there for a generation or more and which must be thoroughly acclimatized.

"The two varieties are known locally as *Golden Ball*, which is a durum type, and *Oude Baard*, a bearded, soft wheat. Both are good yielders, and the latter is said to be somewhat better in yield than the former, although somewhat less drought resisting.

"These wheats are grown in a region where the average rainfall for the last five years has been $3\frac{1}{4}$ inches per annum, and the incidence of the rainfall is such that it is practically of no benefit to the crop. On the other hand, the soil temperature is extraordinarily high and the evaporation enormous, somewhere in the neighborhood of 108 inches per annum.

"The wheat is grown under what is known as the 'Zaaidam' system, which is identical with the basin-irrigation system of Upper Egypt, with this difference, that whereas the Egyptian plan deals with practically a constant water supply, the Zak River is very erratic in its flow, sometimes coming down in February and at other times, perhaps, in March, April, May, or June, and sometimes even as late as August or September. As a rule one can only count upon its coming down once in the year or at least being only once available for the crop during the season, though occasionally, in an exceptionally favorable season, the crop gets two irrigations.

"The land, being extraordinarily hard, is not plowed until the river comes down; the water is then allowed to stand on the land, in basins sometimes 1,500 acres in extent, for two to ten days, or even three weeks, according to the quantity of water available and the requirements lower down the stream. Storage

is effected by means of dams, sometimes 2 miles in length, thrown right across the river valley. By this means the soil is soaked to a depth of 6 feet or more. The water is then run off into the next dam, and as soon as the surface is dry enough the land is plowed and the seed is sown broadcast and harrowed in. The rest is left to nature.

"There is a good deal of brack in these soils (both sodium carbonate and sodium chlorid). On this account there is a possibility of the strains I am sending you being more alkali resistant than might otherwise be the case, but I have no actual proof that this is so. Under the circumstances, these wheats are grown with almost a minimum of moisture which would support a crop and, I think, should be suitable for cultivation in parts of the United States.

"It is, of course, possible that you will find that they correspond closely with types already grown in the United States, but as they are among the oldest types of wheat known in South Africa, they may have developed local peculiarities quite different from any possessed by your American wheats."

46766. TRITICUM DURUM Desf.

"*Golden Ball*. A durum wheat; not so good a yielder as *Oude Baard*, but more drought resistant."

46767. TRITICUM AESTIVUM L.

(*T. vulgare* Vill.)

"*Oude Baard*. A bearded, soft wheat; a better yielder than the *Golden Ball*, but not so drought resistant."

46768. DIOSCOREA ALATA L. Dioscoreaceæ.

Yam.

From Honolulu, Hawaii. Tubers presented by Mr. J. E. Higgins, horticulturist, Agricultural Experiment Station. Received November 27, 1918.

"The exact identity of this variety I am not able to state. It is beginning to be cultivated here under the name of Chinese yam." (*Higgins*.)

"A purple-skinned, somewhat dark-fleshed yam. When peeled, boiled, and mashed, seasoned with butter, and thoroughly beaten, this yam is much like mashed potato and is equally palatable. It is very smooth in texture when so prepared. It is also good when baked or when sliced and fried after baking or boiling. Like most other yams it should be peeled before boiling." (*R. A. Young*.)

46769. ANANAS SATIVUS Schult. f. Bromeliaceæ. Pineapple.

From Berea, Africa. Presented by Mr. H. Rutter, acting curator, Municipal Botanic Gardens. Received November 1, 1916. Numbered December, 1918.

"Suckers of the Natal variety of pineapple, known locally as the Queen pine." (*Rutter*.)

"This pineapple is of delicious flavor. It averages from three-fourths of a pound for poor specimens to 3 or 4 pounds for choice ones." (*Daily Consular and Trade Reports, January 13, 1914*.)

46770 to 46780.

From Canton, China. Presented by Mr. G. Weidman Groff, Canton Christian College. Received November 26, 1918. Quoted notes by Mr. Groff.

46770 to 46779.

"A collection of beans procured on the Canton markets."

46770 to 46780—Continued.

- 46770. SOJA MAX (L.) Piper. Fabaceæ. Soy bean.**
 "No. 15036A. *Haak pei tseng tau*. One of the common beans of Kwangtung; said to be very nutritious. Planted in Kwangtung in March and April and again in August and September."
- 46771. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.**
 "No. 15036B. *Mei tau*. Another common bean of Kwangtung; planted in March and April."
- 46772. PISUM SATIVUM L. Fabaceæ. Garden pea.**
 "No. 15036C. *Hohlaan tau*. A variety of pea grown widely in Kwangtung; said to have come originally from Holland, and for this reason called *Hohlaan tau*. The Chinese usually eat this pea with the pod, and it is highly prized by foreigners. It is planted in Kwangtung in October, November, and December."
- 46773. CANAVALI GLADIATUM (Jacq.) DC. Fabaceæ. Sword bean.**
 "No. 15036D. *To tau*. A very prolific vine, sometimes used as an arbor. The beans are edible, though the pods are large and tough. It is planted in Kwangtung in March and April."
- 46774. VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ. Yard Long bean.**
 "No. 15036E. *Haak tau*. A common bean of Kwangtung with edible seeds. It is planted in March and April and again in August and September."
- 46775. PHASEOLUS AUREUS Roxb. Fabaceæ. Mung bean.**
 "No. 15036F. *Luk tau*. Used for bean sprouts, bean curd, etc. Also used in flour. Planted in Kwangtung in March and April."
- 46776. SOJA MAX (L.) Piper. Fabaceæ. Soy bean.**
 "No. 15036G. *Wong tau*. Used to make various bean products. Planted in Kwangtung in March and April."
- 46777. VICIA FABA L. Fabaceæ. Broad bean.**
 "15036H. *Chaam tau*. So called because it resembles a silkworm. It is used in a number of different ways and is planted in March and April."
- 46778. VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ. Yard Long bean.**
 "No. 15036I. *Tseng tau*. Used in various bean products and commonly grown in the north; planted in Kwangtung in March and April."
- 46779. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. Fabaceæ. Adzuki bean.**
 "No. 15036J. *Hung tau*. Planted in Kwangtung in March and April."
- 46780. CASTANEA MOLLISSIMA Blume. Fagaceæ. Chestnut.**
 "When I was up the North River in March near Wushek I saw some fine specimens of chestnut. Through Mr. S. D. Williams, of the railway, I have now obtained a few of these nuts which I am sending under C. P. B. No. 15037."

46781 to 46787.

From Mexico. Collected by Mr. Wilson Popenoe and presented through Dr. H. J. Webber, director of the Citrus Experiment Station of the University of California. Received December 2, 1918. Quoted notes by Mr. Popenoe.

46781. ANNONA DIVERSIFOLIA Safford. Annonaceæ.

Ilama.

"*Papaucc.* Collected at Tapachula, Chiapas, October 18, 1918. The tree strongly suggests *Annona squamosa* in appearance, but is easily distinguished by the leaflike bracts at the base of the branchlets. The fruit is much larger than that of *A. squamosa*, resembling more closely that of *A. reticulata*. It is generally heart shaped, up to 5 or 6 inches in length, with the carpellary areas indicated by incised lines on the surface, which is pale glaucous green in color. The skin is nearly a quarter of an inch thick, the flesh is said to be tinged with rose color when ripe, and the seeds are much larger than those of either *A. squamosa* or *A. reticulata*."

For previous introduction, see S. P. I. No. 36632.

For an illustration of the fruits of this *Annona*, see Plate II.

46782. CARICA sp. Papayaceæ.

"Collected at La Zacualpa, Chiapas, October 10, 1918. A wild carica common in this region. It is very similar to the papaya. The plants grow to a height of about 10 feet and resemble those of the papaya except in the distinctly darker color of the foliage and the less deeply lobed leaves. Staminate and pistillate flowers seem always to be produced on separate plants. The fruits are borne singly, not in clusters, as is often the case in the wild papayas of Florida. They are obovoid-elliptic in shape, 2 to 4 inches in length, orange-yellow in color when ripe, with a more pronounced aroma than in the papaya. The natives call them *melocotones*, or peaches. The flesh is about half an inch thick; each of the numerous seeds which fill the large cavity is inclosed in a translucent, whitish aril, which is the part eaten. The seeds do not adhere to the wall of the seed cavity, as in the papaya, but together with the arils surrounding them entirely fill the cavity. The flavor of the arils is sweet and aromatic, very pleasant, and quite distinct from that of the flesh of the papaya."

46783. CHAMAEDOREA sp. Phœnicaceæ.

Palm.

"From Pochutla, Oaxaca, August 18, 1918. This closely resembles the dwarf palm which I sent in from Guatemala last year under the name *pacayito*. It is abundant on cool, shady mountain sides in the coffee district above Pochutla, at altitudes of about 3,000 feet. When mature, the plant has a slender trunk, perhaps half an inch thick and 2 feet high. The leaves are 12 to 18 inches in length, rather finely pinnate, deep green, graceful, with the rachis stiff but arching slightly. As a house plant for the Northern States and for use in fern dishes it seems to me this plant possesses unusual possibilities, and I strongly recommend it for trial."

46784. NICOTIANA TABACUM L. Solanaceæ.

Tobacco.

"From the cafetal El Progreso, near Pochutla, Oaxaca; altitude, 2,000 feet. Collected August 15, 1918. A pink-flowered tobacco plant, of the type grown in this section of the country. It reaches a height of about 6 feet. I do not know that it has any particular value, but it might be

46781 to 46787—Continued.

planted experimentally somewhere in the United States to determine whether or not it possesses any unusual characteristics."

46785. *PASSIFLORA CILIATA* Ait. Passifloraceæ.

"From Puerto Mexico, Vera Cruz; collected September 9, 1918. The granadita, a passion vine which grows upon the beach in the vicinity of Puerto Mexico. Its fruits are unusually handsome and are sold in the market. They are produced upon slender stems about 4 inches long, and are round, an inch in diameter or slightly larger, and brilliant crimson scarlet in color. They are by far the showiest fruits of this genus which I have seen. The outer covering of the fruit is not hard; the seeds are surrounded by white, translucent pulp of slightly acid flavor. In quality this species is inferior to *Passiflora ligularis*, the flavor not being so aromatic and spicy. For the beauty of its fruits alone, however, it should be worth cultivating, and it would be an excellent species to cross with some of the larger fruited passifloras."

46786. *SAPRANTHUS* sp. Annonaceæ.

"From the mountains near Pochutla, Oaxaca; altitude, 3,000 feet. Collected August 18, 1918. A peculiar annonaceous fruit, which is rather common in the mountains. The tree is tall and slender and grows in the dense forest. The fruits are the size and shape of papaws (*Asimina triloba*); that is, oblong, about 3 to 4 inches in length, and 1½ inches in thickness. The flesh is bright orange color, and I do not believe it is edible; at any rate, it is not eaten by the natives of this region."

For an illustration of a cluster of fruits of this tree, see Plate III.

46787. *VITIS* sp. Vitaceæ.

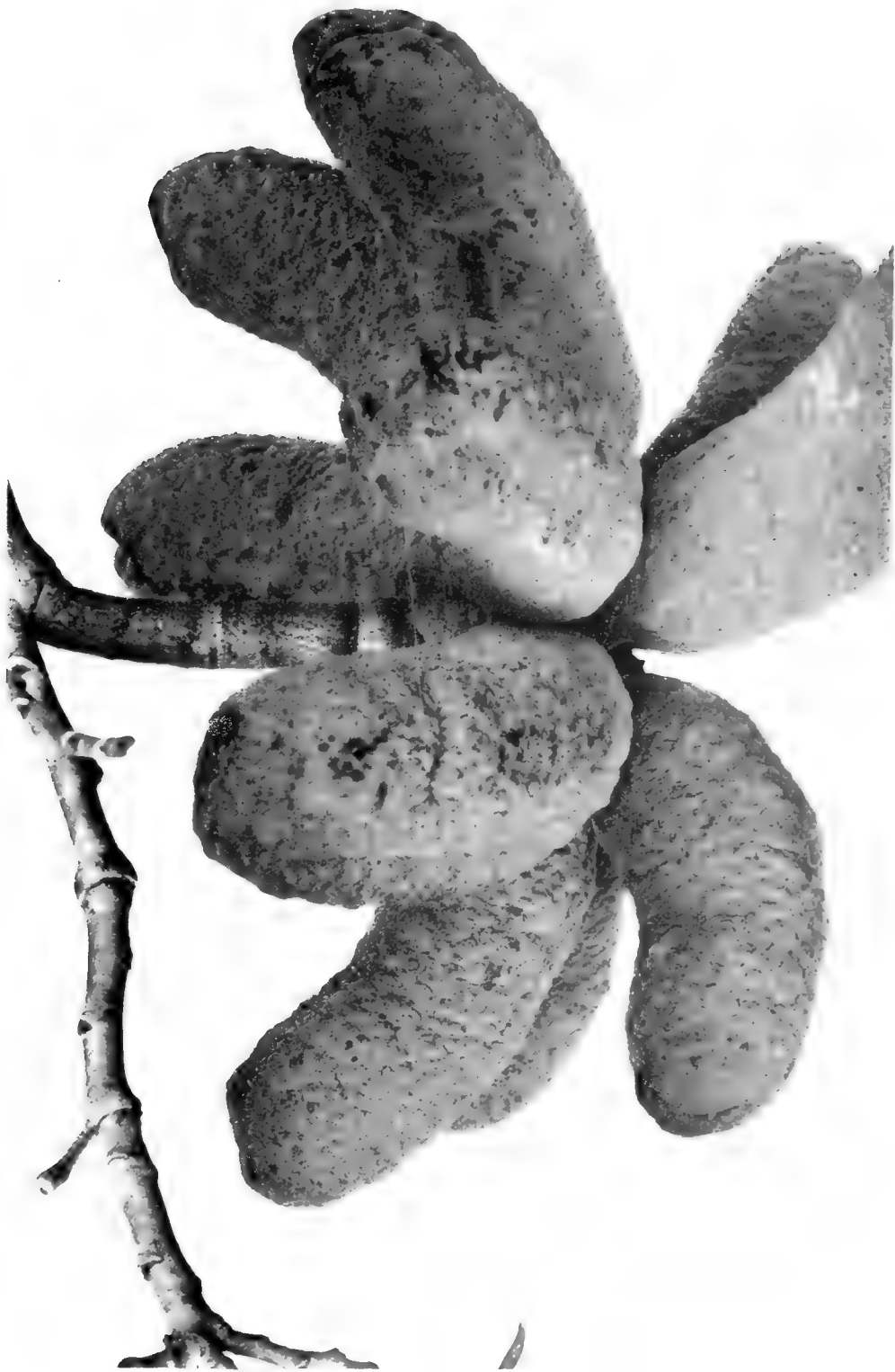
Grape.

"*Totoloche*. Collected at Mogone, Oaxaca, October 1, 1918. A wild grape apparently belonging to the Muscadine group or closely related to it. The plant is said to be abundant in this region, but I have not seen it. The fruit is brought into town by the Indian women from San Juan Guichicovi. This impresses me as the best grape I have ever seen in the tropical lowlands, and I believe it has value. It should, at least, be of importance in connection with the development of a grape for cultivation in the Tropics. It is vastly superior to *Vitis caribaea*, the berries being of much larger size and better flavor. The bunches are usually small and rather loose, but sometimes contain as many as 50 berries and are quite compact. The individual berries are half an inch in diameter, sometimes larger, round, deep purple-maroon or purple in color when fully ripe. The skin is thick and tough, like that of the Scuppernong; it seems to me even thicker and tougher. The pulp is greenish, very juicy, containing two to four seeds, typically the latter number. While the *totoloche* appears to be most commonly eaten out of hand, it is also used in this region to make wine. When fully ripe the flavor is sweet, with a delicious aroma."

46788. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ. Dasheen.

From Port of Spain, Trinidad. Presented by Mr. Eugene André. Received December 2, 1918.

"Tubers of what are being grown here as Chinese eddoes. This aroid gives better results in poor, dry soil than the dasheen, the latter requiring well-watered, low-lying land for remunerative crops." (André.)



FRUITS OF AN INTERESTING RELATIVE OF THE ANONAS FROM GUATEMALA. (SAPRANTHUS SP., S. P. I. No. 46786.)
The fruits are produced on a small tree 15 feet high, with immense, deep-narrow flowers, the outer petals of which are up to 4 inches long. The fruits are bright orange in color and resemble very much those of our own Asimina, or pawaw. It may prove valuable in breeding work. (Photographed, natural size, by Wilson Popetoc, City of Guatemala, Guatemala, November 10, 1916; P16926FS.)



THE FAMOUS SEALING-WAX PALM OF THE MALAY ARCHIPELAGO. (CYRTO-STACHYS LAKKA BECCARI, S. P. I. No. 46865.)

This palm, which is scarcely known in America, merits trial in southern Florida and in our island possessions. The strong suckering habit lends this palm to mass effects that are usually difficult to attain in such stately subjects. The common name is apparently derived from the bright red sheaths. (Photographed by J. F. Rock, Singapore, Straits Settlements, September, 1920; P22622FS.)

"This variety, known in Trinidad as Chinese eddo, is very similar in appearance to what has been previously introduced in the United States as the Trinidad dasheen. The quality of the specimens received is excellent." (R. A. Young.)

46789. ROSA GENTILIANA Lev. and Van. Rosaceæ. **Rose.**

From England. Presented by Sir David Prain, director of the Royal Botanic Gardens, Kew. Received December 3, 1918.

"A plant grown from a cutting supplied by Sir William Thiselton-Dyer." (Prain.)

A rose which is abundant in the mountainous regions of western Hupeh and eastern Szechwan, where it forms tangled masses 6 meters or more in height. The numerous large white flowers are very fragrant, and the anthers are golden yellow. The species is easily distinguished by its glabrous, pale-gray shoots and the 3 to 5 foliolate leaves, which are shining green above and very pallid beneath. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 312.)

Received as *Rosa cerasocarpa* Rolfe, which is referred to *R. gentiliana* in *Plantae Wilsonianae*.

46790. DIALYANTHERA OTOBA (H. B. K.) Warb. Myristicaceæ.
(*Myristica otoba* H. B. K.)

From Colombia. Presented by Mr. M. T. Dawe, Estacion Agronomica Tropical, San Lorenzo. Received December 3, 1918.

"A few days ago, in a local market, I came across a kind of butter or fat, known as *otoba*, which the people here very much prize as a remedy for sores and skin diseases in cattle, and also for the eradication of ticks. I am also informed that persons suffering from eruptions take pills of this substance, it is said, with beneficial results. *Otoba* finds a ready sale in the local markets at from 30 to 50 cents per pound. The fat or butter is prepared from the seeds of *Myristica otoba*, a large forest tree of the Cordillera in this region, at about 5,000 feet altitude. The seeds when cut open have a distinct and agreeable odor which is imparted to the butter when prepared." (Dawe.)

46791 to 46793.

From Angola, Africa. Presented by Mr. J. Gossweiler, Servicos de Agricultura, Loanda. Received December 3, 1918.

46791. ALBIZZIA WELWITSCHII Oliver. Mimosaceæ.

An unarmed, tropical African tree, sometimes 80 feet high, with a spreading, truncate crown. The doubly pinnate leaves are made up of three to five pairs of pinnae, each bearing four to eight pairs of obliquely ovate, glabrous, shining leaflets from 1 to 2 inches long. The flowers are borne in axillary corymbs and are followed by thin, subcoriaceous, slightly curved pods 4 to 5 inches long. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 2, p. 362.)

46792. ALOE LITTORALIS Baker. Liliaceæ.

Growing in the coast region of Angola, Africa, this aloe is a shrub often 10 feet tall with a simple trunk as thick as a man's arm. The leaves, arranged in dense rosettes, are sword shaped, 2 to 3 feet long, with spreading, horny, marginal teeth. The inflorescence is a panicle 4 to 5 feet long with branches of cylindrical racemes 1 foot long, densely crowded with the short-pedicelled flowers. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 7, p. 467.)

46791 to 46793—Continued.

46793. *PACHYLOBUS EDULIS* MUBAFO (Ficalho) Engl. Balsameaceæ.
(*Canarium mubafo* Ficalho.)

A tree found in the Cameroon Valley in Upper Guinea, Africa. The odd-pinnate leaves have 15 to 17 coriaceous, ovate leaflets 4 to 6 inches long. The small flowers are borne in rusty tomentose panicles collected near the ends of the branches. The oval, black fruits, about 3 inches long, have a pleasant taste. It is related to the Java almond and to the pili nut. (Adapted from *Oliver, Flora of Tropical Africa, vol. 1, p. 327.*)

46794 to 46799. *TRITICUM AESTIVUM* L. Poaceæ. **Wheat.**
(*T. vulgare* Vill.)

From England. Collected by Dr. William A. Taylor, chief, Bureau of Plant Industry, during his recent trip to England. Received December 5, 1918. Quoted notes by Mr. J. A. Clark.

46794. C. I. 6219. *Federation*. **46796.** C. I. 6221. *Onas*.

46795. C. I. 6220. *Boadicea*.

46797. "C. I. 6223. *Yeoman*. Obtained from Prof. Biffen, Cambridge, England, who originated the variety. He stated to Dr. Taylor that it was the result of a cross made between the Red Fife wheat of Canada and one of his own strains."

46798. "C. I. 6224. *Yeoman*. A sample of Yeoman wheat grown by Mr. Alfred Amos, Wye, Kent, England, from a field of about 2½ acres which Mr. Amos said yielded at the rate of 96 bushels per acre."

46799. "C. I. 6225. An unidentified club wheat."

46800. *RUBUS GLAUCUS* Benth. Rosaceæ. **Andes berry.**

From Palmira, Colombia. Cuttings presented by Mr. Charles J. Eder. Received December 6, 1918.

"I believe the natural habitat of this berry to be about 8,000 feet above sea level." (*Eder.*)

For previous introduction, see S. P. I. No. 45365.

46801. *DIOSCOREA ALATA* L. Dioscoreaceæ. **Yam.**

Tubers grown at the Plant Introduction Field Station, Miami, Fla. Numbered for convenience in distribution.

"A very prolific, white-fleshed yam, obtained in the spring of 1918 by David Fairchild from Prof. C. T. Simpson, Lemon City, Fla. It grows best in deep, light, sandy land. It is supposed to have come previously from the West Indies. The skin is without coloration, and the flesh remains snowy white when cooked. As compared with most other yams, it is very dry. It is well adapted for baking and for boiling and mashing; the mashing should be very thorough. It is best to pare yams before boiling." (*R. A. Young.*)

46802 and 46803.

From Ecuador. Cuttings collected by Dr. J. N. Rose, associate curator, United States National Herbarium. Received December 7, 1918.

46802. *NAGEIA* sp. Taxaceæ.
(*Podocarpus* sp.)

"Huigra, November 4, 1918." (*Rose.*)

46802 and 46803—Continued.

- 46803.** *PERSEA AMERICANA* Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

"No. 23556. Quito, altitude 9,500 feet. October 28, 1918." (*Rose.*)

"This variety apparently belongs to the Mexican race. It will probably be hardy and should be tested in sections of the United States which are slightly too cold for avocados of the West Indian or Guatemalan races. It is probable that it will prove to be a small-fruited variety of rich flavor, as the Mexican race usually produces fruits of this character." (*Wilson Popenoe.*)

46804 to 46820.

From Johannesburg, South Africa. Presented by Mr. J. Burt Davy. Received December 9 and 10, 1918. Quoted notes by Mr. Davy.

- 46804.** *ACACIA CYCLOPS* A. Cunn. Mimosaceæ.

"Naturalized on the Cape Flats, where it has proved valuable as a sand binder. Should succeed equally well on the California coast."

For previous introduction, see S. P. I. No. 30777.

- 46805.** *ACACIA GIRAFFAE* Willd. Mimosaceæ.

"*Kameel doorn.* A valuable timber tree for arid regions in the warm Temperate Zone. One of the few native trees in British Bechuanaland. The ripe pods are greedily eaten by stock. It thrives in sandy soil, attains a large size, and furnishes valuable shade. The wood is dark red-brown in color and is used by the Bechuanas for spoons, knife handles, etc. At one time this tree furnished all the fuel for Kimberly, Vryburg, and Mafeking."

- 46806.** *ERAGROSTIS SUPERBA* Peyr. Poaceæ.

"A valuable pasture grass; somewhat ornamental also."

For previous introduction, see S. P. I. No. 44741.

- 46807.** *HIBISCUS URENS* L. f. Malvaceæ.

"*Wilde Stok-roos.* Ornamental perennial from the Calvinia Division, Cape Province, with a rainfall of under 4 inches."

A strong-growing, shaggy plant with handsome, deep-crimson flowers which are produced throughout the whole summer. (Adapted from *Harvey and Sonder, Flora Capensis, vol. 1, p. 173.*)

- 46808.** *LOBELIA ERINUS MICRODON* (DC.) Sond. Lobeliaceæ.

"An ornamental annual, entirely different in habit from the ordinary garden form, being erect instead of diffuse. The fragrant flowers present beautiful shades of blue and white."

- 46809.** *MANIHOT GLAZIOVII* Muell. Arg. Euphorbiaceæ. **Ceara rubber.**

"From Knysna, Cape Province."

"Ceara rubber occupies the second rank, and it would undoubtedly be equal to Para rubber if the sap were collected by some method so that it would not include so much foreign stuff. Ceara rubber is very elastic, dry, and not sticky unless it is impure, but when impure the loss in bulk amounts often to 25 per cent. The tree grows to a height of about 30 feet with a round head. It has 3 to 7 lobed gray-green leaves, in shape and size resembling those of the castor-bean plant." (*Semmler.*)

For previous introduction, see S. P. I. No. 4264.

46804 to 46820—Continued.

46810. *RHUS VIMINALIS* Ait. Anacardiaceæ.

"*Karree boom*. A hardy, evergreen tree, withstanding the drought and frost of the upper karoo, which has an altitude of 4,600 feet and a rainfall of about 10 inches in summer only. It grows readily from seeds, cuttings, or poles or stumps set in moist ground and kept moist until growth starts. Plants have been known to make a growth of $13\frac{1}{2}$ feet in three years. It prefers a thin, limestone soil, but thrives on other soils and attains a height of about 30 feet and a spread of the same distance. It is considered an excellent timber for gate and fence posts, poles having been found in good condition 25 years after they had been set in the ground. The wood is flexible and is considered excellent for yokes, keys, tobacco pipes, and furniture. Sheep and goats browse on the foliage, and the sweetish fruits are eaten by children and poultry. The *karree boom* makes a beautiful street and shade tree, being hardier and more ornamental than *Schinus molle*, which it resembles in habit. It should be tried in southern California, in Arizona, and in New Mexico. Sow seeds in the spring; plant cuttings or poles in midsummer."

46811. *TRIFOLIUM ANGUSTIFOLIUM* L. Fabaceæ.

Clover.

"An annual, naturalized around Cape Town. It might succeed as a green-manure crop on sandy soils in California or other regions of winter rainfall."

For previous introduction, see S. P. I. No. 34196.

46812. *TRITICUM DURUM* Desf. Poaceæ.

Wheat.

"South African durum, grown in the Cape Province from American seed."

46813 to 46817. *TRITICUM AESTIVUM* L. Poaceæ.

Wheat.

(*T. vulgare* Vill.)

46813. "*Spring Early*. Bearded; white; excellent milling quality; splendid yielder. This variety has become very popular of late in the western provinces; origin unknown."

46814. "*Thew*. This wheat has withstood rust for several years in the western provinces and is giving encouraging results."

46815. "*Rietti*. Bearded; ear long and open, shedding rather too easily. It stools well and is a heavy yielder, especially in wet, late seasons; wonderfully rust resistant. The grain is dark, but the flour is very white, and the variety is greatly valued as a milling wheat. This is the most extensively grown wheat in the western provinces, though *Glujas Early* threatens to oust it from this position. It has not given very good results in the region of summer rainfall."

46816. "*Du Toit*. Beardless; small, white grain; a good milling wheat. This variety has been grown for a number of years in certain of the western-province districts."

46817. "*Glujas Early*. Beardless or semibearded; white; excellent quality; good yielder; does not shell out too easily. This is probably the most rust resistant of all the white varieties of wheat yet introduced into the western provinces and stands second only to *Rietti* in the acreage under cultivation in the principal wheat areas. It is annually gaining in popularity, with every prospect of ousting *Rietti* from the premier position. Now largely grown in the Transvaal also."

46804 to 46820—Continued.**46818.** *VIRGILIA CAPENSIS* (L.) Lam. Fabaceæ.

"*Keurboom*, from Storms River, Cape Province. A small tree cultivated for its ornamental foliage and sweetly scented flowers. Its cultivation is most simple, but it dislikes drought and is subject to the red scale. The wood is rather light and soft and looks well when polished, but is subject to worm-eating. It is occasionally used for yokes, rafters, spars, fuel, etc."

46819. *CUCUMIS* sp. Cucurbitaceæ.

"Wild cucumber from the Kalahari Desert; said to be eaten by stock."

46820. *MUNDULEA SUBEROSA* (Roxb.) Benth. Fabaceæ.

"An ornamental, leguminous shrub from the warm-temperate, arid belt of the Transvaal."

46821. CANNA EDULIS Ker. Cannaceæ.**Edible canna.**

From Honolulu, Hawaii. Tubers presented by the Agricultural Experiment Station. Received April 1, 1918. Numbered December 31, 1918.

This plant, which is exclusively cultivated in Queensland, grows to a great height, often rising to 8 or 9 feet. It has very large, broad, ribbed leaves; and as many as 15 to 20 stalks rise from a single stool, each stalk representing a large bulb. In the flowering season the plant sends up a long, straight spike, from the head of which bursts a beautiful bunch of bright-scarlet flowers having the appearance of those of the common canna, known as "Indian Shot," but far larger. The seeds do not often mature, however, as do those of the canna family generally. The bulbs, from which the arrowroot of commerce is prepared, form a compact mass on and near the surface of the soil, and so prolific is the plant that I have dug from a single stool as much as 60 and even 80 pounds of bulbs. (Adapted from A. J. Boyd, *Queensland Agricultural Journal*, vol. 10, p. 32.)

For further information regarding its cultivation and manufacture, see above reference.

"The rootstocks are edible and palatable when properly cooked. More culinary experimentation with them, however, will be required before any definite decision regarding their probable popularity can be made. In Hawaii, where the experiment station officials have been growing an acre of this *Canna edulis*, Mr. F. G. Krauss informs us they have eaten it after boiling for 30 minutes and then mashing it as one does boiled potatoes, and he declares it is a good substitute for the potato. In his opinion it outyields the potato two to one. The tops have been used as forage for cattle and swine." (*David Fairchild*.)

For previous introduction, see S. P. I. No. 46313.

46822 to 46831. × CASTANEA NEGLECTA Dode. Fagaceæ.

From Cape Henry, Va. Collected by Mr. J. B. Norton, physiologist, of the United States Department of Agriculture. Received December 10, 1918. Quoted notes by Mr. Norton.

"While at the Virginia Truck Experiment Station at Diamond Spring, Va., in 1918, I had occasion to make an observation trip through the dune and desert region inside Cape Henry. Along the inside edge of the big dune were large trees of many kinds being covered up by the encroaching sand; and along the foot of the dune I found empty chinquapin burs. No bushes suggesting chin-

quapins were present, but a search revealed that the burs had dropped from a tree fully 30 feet high growing well up on the slope. On the inner side of the dune are found the best trees, but as the advancing sand covers up the lower part of the tree all we see is the top, looking like a thicket of shrubby bushes. Sometimes the top is seen sticking out of the dune fully 40 or 50 feet above the 'desert' floor. In the 'desert' I could find only in rare instances trees that showed a main trunk undamaged by fire. Most individuals were shrubby growths from a large basal crown, often with two or more sets of fire-killed shoots of different ages among the living shoots. Cuttings were collected from several of these trees and shrubs, but until they are tested their relative merits will be uncertain. Some of the fire-burned shrubs may be better potentially than the large ones that escaped burning."

46822. "No. 1. From a tree back of old sand pit in the 'desert' country. Collected December 4, with Mr. L. B. Smith, of the Virginia Truck Experiment Station. Growing in very light shifting sand among scrub oaks. In some way this escaped the fires that caught all its neighbors. The trunk is large enough to yield a good post."

46823. "No. 2. From a tree pointed out by Mr. Moses Brown, the game warden of this vicinity, who said that he had in past years taken as much as 2 bushels of nuts from it. The nuts of this tree are larger than those on other trees in the 'desert,' according to Mr. Brown. Although the tree is a dwarf in the poor 'desert' sand, a good railroad tie could be made from the trunk."

46824. "No. 3. From a tree 10 inches in diameter growing near the pond in the edge of the dune back of a new pit about 100 yards southwest of the big tree (No. 7)."

46825. "No. 4. From a scrub tree in burned-over 'desert,' gathered as a check sample of the normal growth in this region. It is possible that some of these burned-over trees may be the best in growth."

46826. "No. 5. From a tree growing through the dune northeast of the big tree (No. 7) at a new pit. It stands 40 feet up the side of the dune and has branches 4 inches through and 12 feet high. It must be a large tree covered up, as it spreads over 30 feet of dune face."

46827. "No. 6. I have called this the evergreen tree, as its leaves were largely green and persistent at this date [December 6]. It stands well up on the dune face several hundred yards northeast of the big tree (No. 7). The nuts on this tree must be very large, as the hulls are much larger than those normally seen at Washington. The bur clusters are often 4 to 6 inches long."

46828. "No. 7. From the big tree found in October. As this now stands covered with 30 feet of sand, it is made up of two large branches 10 inches in diameter projecting 30 feet above the sand. Below the junction the trunk must be much larger. An old dead pine top just back of this tree indicates that the ground here is nearly at the base level of the 'desert.' This tree must have been at least 50 feet high."

46829. "No. 8. From a tree with an 8-inch clear trunk 12 feet high below the branches, found in the 'desert' scrub south of the big tree (No. 7)."

46830. "No. 9. From a tree with a 10-inch clear trunk projecting from the dune 30 feet up from the base; part of a tree top, its branches spreading out and making a veritable thicket on the dune, northeast of the big tree (No. 7)."

46822 to 46831—Continued.

46831. "No. 10. From the only tree found growing in moist soil, with surroundings indicating an old swamp. Blueberry and similar shrubs grew near this. This tree is almost 10 inches through at the base and would make good post wood."

46832. RIBES VULGARE Lam. Grossulariaceæ. Garden currant.

From Maidstone, England. Plants purchased from George Bunyard & Co. Received December 10, 1918.

Transparent. A currant of moderate growth, with long bunches of pleasantly flavored, large, yellow berries; an excellent exhibition variety. (Adapted from *Bunyard & Co.'s trade catalogue.*)

46833. VITIS sp. Vitaceæ. Grape.

From Southport, Conn. Cuttings presented by Mr. R. P. Wakeman. Received December 12, 1918.

"During the past few years I have brought a few seedling grapes to fruitage, and out of the lot one seems good enough to be considered an acquisition. It is white in color and between *Niagara* and *Green Mountain* in size. The bunches are of good size, but are not shouldered exactly like the *Niagara*. The berries have tender pulp and are very sweet. They ripen in southwestern Connecticut about September 6 and hang on well. It makes fine grape juice." (*Wakeman.*)

46834 to 46853.

From Jamaica Plain, Mass. Seeds of trees and shrubs from various sources presented by Prof. C. S. Sargent, Arnold Arboretum. Received December 12, 1917. Quoted notes from the Arboretum.

46834. ABIES SIBIRICA NEPHROLEPIS Trautv. Pinaceæ. Fir.

"Forma *chlorocarpa*. Green cone form from Japan. Wilson No. 10509."

46835. ACANTHOPANAX sp. Araliaceæ.

"Forrest No. 14853. A. No. 498."

46836 and 46837. ACER sp. Aceraceæ. Maple.

46836. "Forrest No. 14763. A. No. 508."

46837. "Forrest No. 15324. A. No. 509."

46838. BETULA CHINENSIS Maxim. Betulaceæ. Birch.

"Wilson No. 10707; from Japan."

46839. BETULA SCHMIDTII Regel. Betulaceæ. Birch.

"Wilson No. 10710; from Japan."

46840. BETULA sp. Betulaceæ. Birch.

"Forrest No. 15381. A. No. 552."

46841. LARIX sp. Pinaceæ. Larch.

"Green cone form from Japan. Wilson No. 10508."

46842 to 46853. (Undetermined.)

"Araliaceous trees and shrubs collected by the Forrest Expedition in 1918, eastern Asia."

"The 'A' numbers are the serial numbers under which the seeds were sent out. Where a 'Forr.' number is also given, Mr. Forrest had reason

46834 to 46853—Continued.

to suppose that the seed was that of a plant similar to one from which he had taken herbarium specimens perhaps at a considerably earlier date." (Extract from a letter of the *Director of Laboratory, Royal Horticultural Society Gardens, October 5, 1920.*)

46842. "Forr. No. 15045; A. No. 495."

46843. "Forr. No. 15046; A. No. 496."

46844. "Forr. No. 14852; A. No. 497."

46845. "Forr. No. 14683; A. No. 499."

46846. "Forr. No. 14940; A. No. 500."

46847. "Forr. No. 14969; A. No. 501."

46848. "Forr. No. 15212; A. No. 502."

46849. "Forr. No. 15342; A. No. 503."

46850. "Forr. No. 15353; A. No. 504."

46851. "Forr. No. 15789; A. No. 505."

46852. "Hills north of Tengyueh, 1917. A. No. 506."

46853. "Chungtien plateau shrub, 20 to 30 feet. A. No. 507."

46854 to 46859. PAPAVER SOMNIFERUM L. Papaveraceæ. Poppy.

From India. Seeds presented by Mr. James A. Smith, American consul, Calcutta, who obtained them from the economic botanist of the Government of the United Provinces. Received December 19, 1918. Quoted notes by Mr. Smith.

46854. "No. 1. *Lakanio*. Good; mostly red flowers."

46855. "No. 2. *Gingorio*. Mostly white flowers."

46856. "No. 3. *Dhaturia*. Flowers white with pink and red tips; also pink flowers."

46857. "No. 4. *Dhaura Dhaturia*. White flowers tipped with red."

46858. "No. 5. *Horia*. Mostly white flowers; also some colored. Long pods, not round."

46859. "A mixed lot of colored varieties."

46860. THEOBROMA CACAO L. Sterculiaceæ. Cacao.

From Grenada, British West Indies. Presented by Mr. J. C. Moore, superintendent, Agricultural Department. Received December 27, 1918.

"This variety is known locally as *Caracas*. The pods are a reddish claret color while young and until they commence to ripen." (*Moore.*)

46861. LIVISTONA ALTISSIMA Zoll. Phœnicaceæ. Palm.

From Buitenzorg, Java. Presented by the director of the Botanic Gardens. Received December 27, 1918.

A graceful palm with a trunk about 8 inches in diameter and often 80 feet tall, and bearing globose fruits the size of small cherries. The natives value the exceedingly hard wood very highly and use it especially for rafters, which last for three generations. (Adapted from *Zollinger, Natuurkundig Tijdschrift voor Nederlandsch Indie, vol. 14, p. 150.*)

46862. JATROPHA URENS L. Euphorbiaceæ.

From Santiago de las Vegas, Cuba. Cuttings presented by Dr. Mario Calvino, director, Experiment Station. Received December 30, 1918.

Variety *inermis*.

The *chaya* is a shrub with fleshy branches bearing palmate 3-lobed leaves, 12 to 25 centimeters wide, dark green in color. The flowers are small, white, very pretty, especially in the wild spiny variety. There are two types of *chaya*, one provided with stinging hairs and the other unarmed, except for one or two hairs on the peduncle or petiole. This latter type is the one cultivated in Yucatan for the leaves, which are eaten in the same way as spinach, especially with eggs and hash. These leaves are rather thick and keep easily for several days, so that they could become a winter export, if once they were known and appreciated in the North. The *chaya* is propagated by cuttings, choosing the tips of the branches, to avoid the heavy bark, which calluses with difficulty. (Adapted from *Revista de Agricultura Comercio y Trabajo, Cuba, vol. 2, no. 8, p. 364.*)

"*Chaya de Mexico*. The leaves are edible; the following is the result of an analysis of them made at our station during the rainy season: Moisture, 74.00 per cent; protein, 0.94 per cent; ether extract, 0.20 per cent; carbohydrates, 20.71 per cent; crude fiber, 2.25 per cent; ash, 1.90 per cent." (*Calvino*.)

46863. PAULLINIA CUPANA Kunth. Sapindaceæ. Guarana.

From Para, Brazil. Presented by Dr. J. Simao da Costa. Received December 30, 1918.

A climbing shrub with compound leaves made up of five, irregularly toothed leaflets. The small whitish flowers are borne in long racemes and are followed by 3-valved capsules about the size of filberts, each containing from one to three seeds. The pounded seeds are extensively used in Brazil as a nerve stimulant and restorative. The active principle is said to be the same as thein and is produced more abundantly than in any other plant, often as much as 5 per cent being found. The pounded seeds are formed into cylindrical cakes from which about a teaspoonful of powder is rasped off into a glass of cold water, making a refreshing and stimulating drink. (Adapted from *Lindley, Treasury of Botany, p. 852.*)

46864. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.

Plants grown from cuttings of S. P. I. No. 21781 sent to the Plant Introduction Field Station, Chico, Calif., by Mr. William Hertrich, San Gabriel, and grafted on seedlings of S. P. I. No. 46131. Numbered for convenience in recording distribution.

"The *yang-tao*, a deciduous climber, native to Szechwan Province, has attracted considerable attention because of the high quality of its fruits and the ornamental value of the plant. The leaves have a plushlike texture and an unusual dark-green color, while their large size and regular spacing add to the beauty of the vine. The flowers are buff yellow to white, fragrant, often 1½ inches across and are produced in great abundance. The fruits are ovoid to globose and about 2 inches long. The outside is russet brown and clothed with villous hairs. The flesh is green, of most excellent flavor, resembling that of a gooseberry, but tempered with a flavor peculiarly its own. The fruit is good when eaten fresh, and it also makes a very fine jam and sauce." (*David Fairchild.*)

46865. CYRTOSTACHYS LAKKA Beccari. Phœnicaceæ. Palm.

From Singapore, Straits Settlements. Presented by Mr. O. W. Barrett.
Received December 30, 1918.

"Kredok."

A tall, slender palm, native to Borneo. The pinnately divided leaves, 3 to 5 feet long, are made up of leaflets 18 inches long and 2 inches wide, which are obliquely bifid at the apex. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 946.)

For an illustration of this palm, see Plate IV.

46866 to 46868. THEOBROMA CACAO L. Sterculiaceæ. Cacao.

From Coban, Guatemala. Presented by Mr. Oscar Majus. Received December 30, 1918. Quoted notes by Mr. Majus.

46866. "No. 1. Fruits with a red husk."

46867. "No. 2. Fruits with yellow husks."

46868. "No. 3. Fruits with a green husk."

46869 and 46870.

From Ganganba, Portuguese West Africa. Presented by Mr. A. W. Bailey.
Received December 30, 1918. Quoted notes by Mr. Bailey.

46869. PENNISETUM GLAUCUM (L.) R. Br. Poaceæ. Pearl millet.
(*P. typhoideum* Rich.)

"Seeds of our giant African millet, called locally *Masangu*."

46870. VOANDZELA SUBTERRANEA (L.) Thouars. Fabaceæ.

"Seeds of the ground bean, which is used commonly for food both by natives and Portuguese. The local name is *vielu*. While these require a long season to mature, they may be used green as shell beans. The natives plant one in a hill. The plants do not require an excessively fertile soil."

46871 to 46890.

From Burringbar, New South Wales, Australia. Presented by Mr. B. Harrison. Received November 28, 1918. Quoted notes by Mr. Harrison, unless otherwise stated.

46871. ACACIA ANEURA F. Muell. Mimosaceæ. Wattle.

"*Mulga*. This is a dry-country species. The foliage is eaten by stock in dry weather."

46872. ACACIA HOMALOPHYLLA A. Cunn. Mimosaceæ. Wattle.

"Native name *yarran*. A dry-country species greatly used for fodder; stock eat it freely. The timber, which is fragrant for some years after being cut, is used for cabinet and ornamental work."

46873. ANGOPHORA SUBVELUTINA F. Muell. Myrtaceæ.

"Called here 'apple-tree.' A large, spreading tree with strong and durable timber which is used for wheelwright work and flooring boards. The foliage is used to feed stock in dry seasons."

46874 to 46880. ATRIPLEX spp. Chenopodiaceæ. Saltbush.

The saltbushes are herbaceous or shrubby, usually much-branched plants, and show remarkable adaptation to arid, saline, or alkali-impreg-

46871 to 46890—Continued.

nated soils. They are highly valued for districts where little or no other vegetation exists. The following descriptions, unless otherwise indicated, are adapted from Farmers' Bulletin 108, entitled "Saltbushes," by Dr. P. B. Kennedy.

46874. ATRIPLEX CAMPANULATA Benth.

A perennial, with a hard, almost woody stem and rather slender, procumbent branches extending to 1 or 2 feet, the whole plant being nearly glabrous or mealy white. It is closely related to *A. leptocarpa*, which it closely approaches in habit, foliage, and inflorescence. (Adapted from *Bentham, Flora Australiensis*, vol. 5, p. 177.)

46875. ATRIPLEX HALIMOIDES Tineo.

Mealy or gray saltbush. A low-growing, shrubby, robust perennial about 1 foot high, with variable, ovate-lanceolate leaves which are covered with whitish, dustlike scales. It is native to the central desert regions of Australia, and there it affords excellent forage for both sheep and cattle, which fatten remarkably well on it.

46876. ATRIPLEX HOLOCARPA F. Muell.

Annual saltbush. A low, densely branching annual about a foot high, with larger and fewer leaves than the Australian saltbush (*A. semibaccata*). The seeds are surrounded by a brown, fibrous spongy covering and are readily blown about by the wind, so that the plant can soon become widely disseminated. It made excellent growth, under adverse conditions, on the experiment grounds at Abilene, Tex. In spite of the worst drought that has ever been known in that part of Texas, this plant continued to mature leaves and seeds throughout the entire summer.

46877. ATRIPLEX LEPTOCARPA F. Muell.

Slender saltbush. A much-branched trailing perennial, the whole plant covered with a glaucous bloom. The leaves are variable in shape, but mostly oblong, and from 1 to 2 inches in length. In Australia it is sometimes found carpeting the ground over considerable areas. Von Mueller says that its drought-resistant qualities are remarkable.

46878. ATRIPLEX NUMMULARIA Lindl.

Round-leaved saltbush. A tall, shrubby perennial, sometimes reaching a height of 10 feet, and covered all over with downy, whitish scales. The leaves are mostly round, rather thick, and toothed along the margins. It is extensively planted and highly valued in central Australia, live stock being exceedingly fond of it, and its drought-resisting qualities are remarkable.

46879. ATRIPLEX SEMIBACCATA R. Br.

Australian saltbush. A vigorous, rapid-growing, much-branched perennial which forms a dense mat over the ground to the depth of 1 to 2 feet. The leaves are small, about an inch long, and coarsely toothed along the margins. This plant has been known to flourish on the poorest and most stubborn arid soil, so impregnated with alkali that no other useful plant could grow. It seems to have a re-

46871 to 46890—Continued.

markable number of virtues, including great frost resistance, palatability, heavy yield, sand-binding qualities, and the habit of spreading freely. Sheep and hogs eat it freely, and a mixture of three parts of this forage with one part of common hay is readily eaten by horses and cattle.

46880. *ATRIPLEX* sp.

These seeds were received as *Atriplex angulata*, but they do not agree with previous samples of this species nor with the botanical description. They are very close to *A. truncata* A. Gray.

46881. *CASUARINA CUNNINGHAMIANA* Miquel. Casuarinaceæ.

"River oak. A tall, straight tree whose timber is light, tough, and strong and is used for bullock yokes, cricket bats, handles, staves, and fuel. The foliage is used for feeding stock."

46882 and 46883. *CASUARINA STRICTA* Ait. Casuarinaceæ.

46882. "Drooping she-oak. A useful timber and the best fodder tree for sheep and cattle in Australia."

46883. "Forest or drooping she-oak. Timber handsome, strong, and durable, used for veneers, cabinet work, staves, and shingles."

Received as *Casuarina quadrivalvis*, which is now considered to be a synonym of *C. stricta*.

46884. *CHLORIS VIRGATA* Swartz. Poaceæ.

"Australian Rhodes grass. It is suited for a wind-swept and sun-scorched district, and is a heavy yielder of a most nutritious fodder that is relished by all classes of stock."

46885. *EUCALYPTUS DIVERSICOLOR* F. Muell. Myrtaceæ.

"The *karri* of southwestern Australia. In favorable localities in humid valleys it attains a height of 400 feet and a diameter of 20 feet, with a trunk clear of branches for 300 feet. The timber is light colored, straight grained, and tough, and is used for large planks, spokes and felloes, shipbuilding, masts, and railroad ties."

46886. *EUCALYPTUS HEMIPHLOIA ALBENS* F. Muell. Myrtaceæ.

"A tree, growing to a height of 90 feet and with a diameter of 3 feet, suitable for cool climates. The foliage is used largely for feeding cattle and sheep during droughts. They eat it freely after the tree has been cut for a few days, as it seems to get sweeter. The timber is hard and durable."

46887. *EUCALYPTUS PAUCIFLORA* Sieber. Myrtaceæ.

"White gum. A tree reaching a height of 100 feet and a diameter of 4 feet. The foliage is eaten by cattle and sheep in dry seasons. The timber is used for building and fencing purposes. This species grows well in swampy lowlands and should thrive well in Florida."

Received as *Eucalyptus coriacea*, which is considered to be a synonym of *E. pauciflora*.

46888. *EUCALYPTUS OBLIQUA* L'Her. Myrtaceæ.

"A tree of rapid growth with a straight stem reaching a height of 300 feet and a diameter of 10 feet. The timber is very fissile and is used for buildings, fence rails, palings, and shingles. The bark is used for rough roofing and also in the manufacture of paper."

46871 to 46890—Continued.**46889. EUCALYPTUS REDUNCA** Schauer. Myrtaceæ.

"The mule gum tree of West Australia, the *wandoo* of the aborigines. It grows to a large size, often being 16 or 17 feet in diameter; it thrives in poor soil and in a cold, flat country. The light-colored timber is hard, heavy, tough, and durable, and is prized for wheelwright work, building purposes, and various implements."

46890. PENNISETUM PURPUREUM Schum. Poaceæ.

Grass.

"Elephant grass. Grows to a height of 10 to 20 feet, is a heavy yielder, and is very drought resistant, being permanent when once established. It yields 30 tons per acre annually and can be cut several times a year. Plant 3 feet apart in rows 5 or 6 feet apart."

46891 and 46892.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received December 2, 1918.

46891. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ.

Yerba maté.

For previous introduction and description, see S. P. I. No. 43456.

46892. SALVIA GARDNERIANA Hort. Menthaceæ.

Sage.

Received as *Salvia gardneriana*, which seems to be a horticultural name, being mentioned in the Standard Cyclopedia of Horticulture, as follows: "*S. Gardneriana* Hort., is offered in the trade."

46893 to 46895.

From Ecuador. Obtained by Dr. J. N. Rose, associate curator, United States National Herbarium. Received December 9, 1918. Quoted notes by Dr. Rose.

46893. CUCUMIS ANGURIA L. Cucurbitaceæ.

"Rose No. 23593. Seeds of a common yellow-flowered small vine growing prostrate in the grass and weeds along the coast of Ecuador. The specimens collected were obtained near Duran, November 8, 1918. It was found only in fruit. This is oblong in shape, about 1½ inches long, with a more or less muricated surface. Seeds and herbarium specimens were obtained."

46894. DIOSCOREA sp. Dioscoreaceæ.

"Tubers of a very beautiful vine found growing in a mountain valley below Huigra, Ecuador. It has showy purple leaves and is a rapid grower. Only immature flowers and leaf specimens were obtained in addition to these tubers."

46895. PERSEA AMERICANA Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

"Seeds taken from fruits obtained in the Quito market."

"Seeds of a variety which apparently belongs to the Mexican race. It will probably be hardy and should be tested in sections of the United States which are slightly too cold for avocados of the West Indian or Guatemalan races. It is probable that it will prove to be a small-fruited variety of rich flavor, as the Mexican race usually produces fruits of this character." (*Wilson Popenoe.*)

46896 and 46897.

From Zacuapam, Mexico. Presented by Mr. C. A. Purpus through the American consul at Vera Cruz. Received December 27, 1918.

46896. *CHENOPODIUM AMBROSIODES* L. *Chenopodiaceæ*.

An annual plant from 1 to 2 meters in height, with alternate lanceolate leaves. The inflorescence consists of simple leafy spikes of very small greenish flowers. The seeds are small and black. The whole plant has a pronounced odor. An infusion of the plant has been used in Europe with good results as a cure for nervous affections. (Adapted from *The Pharmaceutical Journal and Transactions*, 3d ser., vol. 9, p. 713.)

46897. (Undetermined.)

"Fruits of a valuable tree, belonging to the *Anacardiaceæ* and called here *cacao*. This has a beautiful purplish brown, extremely hard wood." (*Purpus*.)

46898 to 46901. THEOBROMA CACAO L. Sterculiaceæ. Cacao.

From the British West Indies. Presented by the Trinidad and Tobago Department of Agriculture. Received December 27, 1918.

Four lots of seeds and pods of cacao without information as to the different varieties. Given separate numbers for convenience in recording distribution.

46902 to 46904.

From Johannesburg, South Africa. Presented by Mr. J. Burt Davy. Received December 27, 1918. Quoted notes by Mr. Davy.

46902. *ELEPHANTORRHIZA ELEPHANTINA* (Burch.) Skeels. *Mimosaceæ*. (*E. burchellii* Benth.)

"The underground stem is used for tanning leather and dyeing stuffs a brown color."

46903. *MOMORDICA BALSAMINA* L. *Cucurbitaceæ*. **Balsam-apple.**

The balsam-apple is known to American gardeners as an ornamental annual vine. The palmately 3 to 5 lobed leaves are cordate-orbicular in outline, with acutely notched lobes. The solitary yellow flowers are nearly an inch across and the orange-colored fruit, 2 to 3 inches long, is ovoid and either smooth or tuberculate. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 4, p. 2060.)

"The balsam-apple grows in Syria and is famous for curing wounds. The unripe fruit is infused in sweet oil and exposed to the sun some days until it becomes red. This, applied on cotton to a fresh wound, is esteemed by the Syrians next to Balsam of Mecca." (*Hogg, The Vegetable Kingdom*, p. 334.)

46904. *PODALYRIA* sp. *Fabaceæ*.

"An ornamental leguminous shrub from the coastal districts of the Cape Province."

46905 to 46942. NICOTIANA TABACUM L. Solanaceæ. Tobacco.

From Montevideo, Uruguay. Presented by Sr. R. S. Silveira. Received December 27, 1918.

"A collection of tobacco seeds, the result of three years of selection work with the best varieties sent to us from various localities." (*Silveira*.)

46905 to 46942—Continued.

46905. "No. 4a. *M a r y l a n d smoking.*"
46906. "No. 8. *Zimmer Span- ish.*"
46907. "No. 8a. *Zimmer Span- ish.*"
46908. "No. 9. *Latakia.*"
46909. "No. 10f. *Virginia.*"
46910. "No. 10g. *Virginia.*"
46911. "No. 10j. *Virginia.*"
46912. "No. 12. *Canario Vuelta Abajo.*"
46913. "No. 12a. *Canario Vu- elta Abajo.*"
46914. "No. 13a. *H a b a n o Vu- elta Abajo.*"
46915. "No. 13d. *H a b a n o Vu- elta Abajo.*"
46916. "No. 13e. *Habano legiti- mo.*"
46917. "No. 14b. *Brasil.*"
46918. "No. 14e. *Brasil.*"
46919. "No. 15. *Del Pais.*"
46920. "No. 22. *Rubio salteno.*"
46921. "No. 27. *Canarias.*"
46922. "No. 28. *Petizo criollo.*"
46923. "No. 29. *Bacino.*"
46924. "No. 30. *Chileno.*"
46925. "No. 32. *Tropezut.*"
46926. "No. 33. *Orinoco.*"
46927. "No. 34. *Sumatra.*"
46928. "No. 36. *Connecticut.*"
46929. "No. 37. *Kentucky.*"
46930. "No. 38. *Salonica.*"
46931. "No. 40. *Belge.*"
46932. "No. 41. *Comstock Spanish.*"
46933. "No. 42. *Aurora.*"
46934. "No. 43. *Habano seedleaf.*"
46935. "No. 44. *Petit Habano.*"
46936. "No. 45. *Canelle R.*"
46937. "No. 46. *Big Habano.*"
46938. "No. 49. *Blue Prior.*"
46939. "No. 50. *Connecticut broad- leaf.*"
46940. "No. 52. *Big Ohio.*"
46941. "No. 1719. *Atyra Habano.*"
46942. "No. 1720. *Barreiro Grande Habano.*"

46943 to 46948.

From Colombia. Presented by Mr. M. T. Dawe, San Lorenzo. Received December 27 and 30, 1918. Quoted notes by Mr. Dawe.

46943 and 46944. *CARICA CANDAMARCENSIS* Hook. f. Papayaceæ.

46943. "A papaw with yellow fruits. The pulp surrounding the seeds is edible, but the flesh is eaten only in preserves. Found in Departamento de Caldas at an altitude of 6,000 to 7,000 feet."

46944. "Another form of the same species."

46945. *CARICA* sp. Papayaceæ.

"*Papayuela cimarron.* A papaw with red fruits found at Belalacazar in the Province of Caldas at an altitude of 6,000 to 7,000 feet. The seeds are surrounded by a sweetish pulp which is eaten. The flesh of the fruit is white and is not considered to be edible while raw, but a preserve is made of it."

"These seeds are apparently the same species as those obtained by Mr. O. F. Cook at Ollantaytambo, Peru (S. P. I. No. 41339). They are about twice as large as the seeds of the evidently closely related *Carica candamarcensis*." (*H. C. Skeels.*)

46946. *DUCHESNEA* sp. Rosaceæ.

"A wild strawberry with yellow flowers and spherical fruits of insipid taste. Central Cordillera at altitudes of 6,000 to 8,000 feet."

46943 to 46948—Continued.

46947. SOLANUM QUITOENSE Lam. Solanaceæ.

"*Lulo*. A plant found in the subtropical parts of Colombia. The edible fruit is employed for flavoring preserves, sweets, and the like."

46948. SOLANUM sp. Solanaceæ.

"A shrub of the habit of the tree tomato, bearing golden yellow fruits the size of duck eggs. It is not edible, but is used for killing cockroaches. From the Province of Caldas at an altitude of 6,000 feet."

46949 and 46950.

From Hongkong, China. Presented by Mr. W. J. Tutcher. Received December 30, 1918.

46949. CAESALPINIA VERNALIS Champ. Cæsalpiniaceæ.

An ornamental shrub, native of Hongkong, and climbing by the reversed prickles on the under side of the leaves. The leaves are bipinnate, being made up of 9 to 12 pairs of pinnæ, each bearing four to eight pairs of ovate leaflets 1 inch long. The lemon-yellow flowers are borne in racemes about 6 inches long. (Adapted from *Curtis's Botanical Magazine*, pl. 8132.)

46950. MUSSAENDA PUBESCENS Ait. f. Rubiaceæ.

A small, ornamental climbing shrub found on the island of Hongkong and in the Province of Yunnan, China. The ovate-lanceolate leaves are minutely pubescent, and the yellow flowers are borne in loose, few-flowered cymes. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, p. 396.)

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Issued May 23, 1922.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

IN-VENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JANUARY 1
TO MARCH 31, 1919.

(No. 58; Nos. 46951 to 47348.)



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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRO- DUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1919 (NOS. 46951 TO 47348).

INTRODUCTORY STATEMENT.

The purpose of these introductory statements has been to emphasize certain introductions which, from the accumulated experience of those in contact with the stream of plant immigrants, appear to have unusual promise or interest. As the years have passed and that experience has widened, the proportion of new plants which appear interesting seems to have increased and the introductory statements have become correspondingly longer. This is quite the opposite of the predictions of my friends, who raised the question in the beginning as to what I proposed to do when all the plants which were worth while had been introduced. Instead of the widening prospect that actually lies before us and which embarrasses us with its wealth of opportunity, they saw in their imagination the stream of new plants becoming a tiny brook and finally stopping altogether. It is interesting to note that, whereas in the spring quarter of 1913 there were 407 introductions, six years later, 1919, there were practically as many (397), and this in the face of a world war which had demoralized shipping. The dearth is not in plant material of great potential possibilities but in experimenters who can adapt these plants to the wide uses of mankind. Ten thousand independent experimenters scattered over this country could spend their lives working on the material we have brought in and not exhaust its possibilities. It is hoped that these introductions will attract the attention of amateurs to important and interesting problems in a way which, perhaps, the descriptions themselves would not, and it is with this idea in mind that the following comments are made:

Beet tops as greens are so common a vegetable that those who are fond of them may like to have a perennial variety (No. 46951) sent by Dr. Trabut from North Africa, which yields large quantities of leaf.

From the same source comes a forage grass (*Phalaris coerulescens*, No. 46955) which may be worthy of naturalizing on the dry sheep pastures of California, since the animals forage on the subterranean bulbous parts of it, as Dr. Trabut writes, when all other vegetation is dried up.

The argan tree of Morocco (*Argania spinosa*, No. 46969), which yields a valuable oil, is again introduced, but whether or not it can stand the cold weather of southern California is the question. Earlier attempts have failed.

The Taiwania (No. 46980) is a Formosan conifer of great beauty, which was obtained by Mr. E. H. Wilson personally from Formosa, and every possible effort should be made to establish it in our Southern States.

Mr. Popenoe describes *Tigridia pavonia* (No. 46981) as a fascinating garden vegetable. When in bloom it has attractive flowers varying from yellow to deep scarlet in color. Mrs. Nuttall, who has them in her garden in the City of Mexico, finds that they multiply rapidly and require no cultural attention. The tubers, called cacomite, suggest chestnuts when cooked.

From Rio de Janeiro the Minister of Agriculture, Mr. Cardinell, sends a collection of seeds of unusual forage and fiber plants (Nos. 46985-46999), collected in the States of Matto Grosso and Amazonas, Brazil, by Dr. Geraldo Kuhlmann, of the Rondon Commission. It will be strange if some valuable grasses for the Southern States do not come from this collection.

Mr. Wester sends in the spores of five tropical ferns (Nos. 47011-47015). Since Mr. Hertrich, of Pasadena, and others have been so successful in growing tree ferns from spores, the beautiful tree ferns of the world ought to be introduced and established, as far as it is possible, where they will add grace and beauty to the woodlands and rockeries of southern California and Florida.

Nos. 47017-47057 represent a remarkable collection of forage grasses made by Sr. André Goeldi, State of Para, Brazil, some of which might find a place on our Everglade lands, provided the soil conditions are suitable. Word now comes of Sr. Goeldi's death, and we record here sentiments of sincere regard. The world can ill afford to lose these research men.

To find attractive plants which will live down to the water line on sand dunes is a problem of no mean importance, and Mr. J. Burt Davy's suggestion of *Mimulus affra* (No. 47099) from the African coast for this purpose is worthy of emphasis.

Since the search for corn is for varieties which have some particularly valuable character that may be incorporated into our American races of corn by breeding, the collection (Nos. 47109-47114) sent by

Mr. Cardinell, which represents varieties reported to grow wild in Matto Grosso, can hardly fail to interest the corn breeders, as will also the dwarf varieties (Nos. 47202 and 47327) sent by Mr. Wester from Cotabato on the island of Mindanao, where this crop has been grown for a long time by the wild tribes.

The roselle as a source of brilliant-red jelly-making material is a valuable plant, and Mr. Fraser's prolific variety (*Hibiscus sabdariffa*, No. 47119), which he has selected on Ramrod Key, Fla., will interest those who are growing the common varieties.

A named collection of 14 varieties of Japanese flowering cherry trees from Yokohama (*Prunus serrulata*, Nos. 47132-47145) includes some of the loveliest of these superb early-flowering trees. It will be recalled that the selected sorts arranged for by Mr. E. H. Wilson and later by Mr. Frank N. Meyer from the famous Arakawa collection near Tokyo were previously introduced.

Mr. Zon, of the Forest Service, is inclined to recommend for trial in Florida the 100-foot Tasmanian cypress pine (*Callitris cupressiformis*, No. 47151), which grows well on the coast on poor soils and may prove useful in furnishing a comparatively soft light wood for local use.

I do not know that the Taranaki rimu (*Dacrydium cupressinum*, No. 47154) has been tried around Santa Barbara, Calif., but, if not, its weeping-willow habit should make it worth trying there.

The culture of certain drug plants has been commercially profitable, and *Strophanthus gratus* (No. 47217), which yields the crystalline strophanthin, may prove to be one of the valuable species for cultivation.

From the quantity of sweets and sweetened chewing gums which many Americans use, it would seem as though their chief aim was to keep their mouths sweet all the time. For such as these Mr. Kirby has sent in from Nigeria seeds of a tropical tree (*Synsepalum dulcificum*, No. 47219) whose berries when eaten in considerable quantity are said to make everything eaten thereafter, for a whole day, whether vinegar, lime juice, or tartaric acid, taste as though it were composed solely of saccharine matter.

Various species of *Vitex* are hardy in America. Because they bloom profusely and produce large quantities of nectar they have been proposed as honey plants. A tropical species, *Vitex grandifolia* (No. 47220) from Nigeria, growing at 1,000 feet altitude, and bearing an edible plumlike fruit which is made into "a kind of honey," will be of particular interest, and it is hoped that it will grow in southern Florida at least.

It is not without a feeling of relief that I call attention to the fact that a remarkable species of tree (*Kokia drynarioides*) has been

saved by Mr. Rock. This tree, which is related to the cotton plant, had become almost extinct—was reduced to a single tree, in fact—but now its progeny, a single tree on Mr. C. C. Conradt's place at Pukoo in Molokai, has borne its first crop, consisting of five seeds. Two of these have been sent to us (No. 47223). To have prevented a tree of such possibilities from becoming extinct may win us more praise from succeeding generations than now seems probable.

It seems almost incredible that no tropical horticulturist has made a real collection anywhere of the anonas for the purpose of their improvement by hybridization. The abo (*Annona senegalensis*, No. 47214), with dark-red flesh, would make possible most remarkable color combinations should some one take up in earnest a study of this fascinating group.

Mr. Benjamin Hunnicutt, of Lavras, Brazil, is convinced of the forage value of the "capim gordura roxa," or molasses grass (*Melinis minutiflora*, No. 47162), and has sent in a quantity of seed. At Lake Alfred, Fla., Mr. John Morley, who has a 2-acre patch of it on which he keeps two dairy cows, finds that if cows are put on the young grass they quickly learn to like it, whereas if the grass is allowed to get coarse they refuse to touch it, perhaps because of its heavy nature.

The brilliancy and grace of the Chorizemas (Nos. 47186 and 47187) as potted plants should make them much better known. They are West Australian shrubs with brilliant orange-red pea-shaped flowers.

A Formosan fir (*Abies mariesii kawakamii*, No. 47198), from the Arnold Arboretum, which grows to 80 feet in height—one of the rarest of the silver firs—and a spruce (*Picea morrisonicola*, No. 47199) from the same interesting region will find their way into our Southern States.

Dr. A. H. Graves, of New Haven, has located a number of chestnut trees (Nos. 47330–47348) which are not dying out but growing well in the area infested by the bark disease. The circumstantial evidence is strong that they have descended from disease-resistant ancestors, and as such may have in them the possibilities of being closely interbred to form a resistant race of the American chestnut.

"Konyaku" (*Amorphophallus konjac*, No. 47226) is an interesting aroid which furnishes a peculiar starch used, as Mr. Swingle discovers, by the manufacturers of aeroplanes and also as a food in Japan. It is grown in the shade of orange trees there and should be tried as a source of starch in America.

Nuts from five selected African oil-palm seedlings (*Elaeis guineensis*, Nos. 47304–47308), coming from Dr. P. J. S. Cramer, of the Buitenzorg Plant-Breeding Station, show that selection is going to mean as much in this important tropical crop as it has in the grains and fruits of the temperate zone.

The clovers represent a group of such great agricultural importance that a new species like the one introduced from Natal (*Trifolium africanum glabellum*, No. 47321) is certain to attract its full share of attention. According to Mr. John Fisher, who sends it from Cedara, it has proved more vigorous than any imported species yet tried at Natal.

Job's-tears have commonly attracted only the attention of those who were looking for seeds from which beads can be made, but the ma-yuen (Nos. 47325 and 47326), a variety from Mindanao, has thin-walled seeds which, according to Mr. Wester, are used for food by the natives.

A relative of the chayote, the tacaco (*Polakowskia tacaco*, No. 47329) of Costa Rica, is a small fruit with a single large seed in it. Unlike the chayote, the fruits refuse to grow if put in the ground, whereas if put on top of the ground and covered with leaves they will sprout. Is there here a clue to some peculiarity worth investigation?

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels, and the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Miss Esther A. Celandier.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., October 1, 1921.

INVENTORY.¹

46951 and 46952.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received January 2, 1919. Quoted notes by Dr. Trabut.

46951. BETA VULGARIS L. Chenopodiaceæ. Beet.

"Variety *perennis*. The leaves may be eaten like spinach. It grows spontaneously in the north part of Africa."

46952. PHALARIS TRUNCATA GUSS. Poaceæ. Grass.

"For winter forage."

A perennial about 2 feet high, found in the Mediterranean region. The flowers are borne in a dense spike, resembling timothy. (Adapted from *Pereira Flora de Portugal*, p. 69.)

46953 and 46954. ORYZA SATIVA L. Poaceæ. Rice.

From Manchuria. Presented by Mr. A. A. Williamson, American consul at Dairen. Received January 3, 1919.

"Seeds of two varieties of dry or upland rice, received from the South Manchuria Railway Company and which were grown at the company's experiment station at Kungchuling. These two varieties are said to have given the best results yet obtained at that place, which lies about 400 miles north of Dairen in latitude between the 43d and 44th degrees, about on a line with Concord, N. H." (*Williamson*.)

46953. "A superior spring form of beardless dry-land rice (*chang ch'un wu mang liu tao*)."

46954. "A large-grained variety of dry-land rice bearded with deciduous awns (*tai ch'ing mao liu tao*)."

46955. PHALARIS COERCULESCENS Desf. Poaceæ. Grass.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received January 3, 1919.

"Seeds of a good forage grass. Our sheep, in summer time, know how to find the subterranean bulbous parts in the ground and live on them when all other vegetation is dried up." (*Trabut*.)

For previous introduction, see S. P. I. No. 22961.

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by this office; and further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases undoubtedly be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

46956. CHENOPODIUM NUTTALLIAE Safford. Chenopodiaceæ.**Huauhtzontli.**

From the City of Mexico, Mexico. Purchased from Mrs. Zelia Nuttall, Coyacan, Mexico. Received January 3, 1919.

"A form of chenopodium (huauhtzontli) having white or rose-colored seeds. [This shipment includes the] entire crop grown at the little village of Los Reyes, as well as that of an Indian woman in Coyacan. This is the finest kind of chenopodium, not at all bitter. The black kind [S. P. I. No. 45722] is slightly bitter, but the Indians say it is good for one's health and like it." (Mrs. Nuttall.)

For previous introduction, see S. P. I. No. 45536.

For an illustration of the fruiting heads of this plant, see Plate I.

46957. RUBUS GLAUCUS Benth. Rosaceæ.**Andes berry.**

From Palmira, Colombia. Presented by Mr. Charles J. Eder. Received January 11, 1919.

Seeds of a large-fruited berry called *Mora de Castilla*, which grows wild in the subtropical zone of Colombia at an altitude of 6,000 to 8,000 feet.

For previous introduction of cuttings from Mr. Eder, see S. P. I. No. 46800.

46958 to 46962. RIBES VULGARE Lam. Grossulariaceæ.**Garden currant.**

From Seine, France. Plants purchased from Nombrot-Bruneau, Bourg la Reine. Received January 4, 1919.

Plants of the following varieties introduced for experimental work being carried on in the Department.

46958. *Belle de Fontenay*.

46961. *Goudoin rouge*.

46959. *Cassis noir le Naples*.

46962. *Ambrée, couleur de chair*.

46960. *Goudoin blanche*.

46963 to 46967.

From Bahia, Brazil. Presented by Mr. H. M. Curran, through the Gray Herbarium, Cambridge, Mass. Received January 6, 1919.

These were received without information other than Mr. Curran's numbers.

46963. *SCHINOPSIS BRASILIENSIS* Engl. Anacardiaceæ.

Curran No. 233.

46964. *ACACIA* sp. Mimosaceæ.

Curran No. 234.

46965. *PITHECOLOBIUM UNGUIS-CATI* (L.) Benth. Mimosaceæ.

Curran No. 237.

A leguminous shrub or small tree with astringent bark and edible pods; the seeds have medicinal uses. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2652.)

For previous introduction, see S. P. I. No. 32916.

46966. *IPOMOEA FISTULOSA* Mart. Convolvulaceæ.

Morning-glory.

Curran No. 253.

46963 to 46967—Continued.

A subshrubby morning-glory with a branched stem, 4 to 10 feet in height. The bell-shaped purplish to pinkish corollas are about 3 inches long. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 3, p. 1659.*)

For previous introduction, see S. P. I. No. 37917.

For an illustration of this morning-glory in full bloom, see Plate II.

46967. MIMOSA sp. Mimosaceæ.

Curran No. 260.

46968. ABELMOSCHUS ESCULENTUS (L.) Moench. Malvaceæ. Okra.
(*Hibiscus esculentus* L.)

From Avery Island, La. Presented by Mr. E. A. McIlhenny. Received January 6, 1919.

Seeds secured for cultural and other experiments in the investigation of okra seed as a possible commercial source of oil.

46969. ARGANIA SPINOSA (L.) Skeels. Sapotaceæ. Argan tree.
(*A. sideroxylon* Roem. and Schult.)

From Algiers, Algeria. Presented by Dr. T. H. Kearney, United States Department of Agriculture. Received January 7, 1919.

"Seeds collected from an argan tree growing in the garden of the School of Medicine at Algiers." (*Kearney.*)

The argan tree is in many respects the most remarkable plant of southern Morocco; and it attracts the more attention as it is the only tree that commonly attains a large size and forms a conspicuous feature of the landscape in the low country near the coast. In structure and properties it is nearly allied to the tropical genus *Sideroxylon* (ironwood); but there is enough of general resemblance, both in its mode of growth and its economic uses, to the familiar olive tree of the Mediterranean region to make it the local representative of that plant. Its home is the sublittoral zone of southwestern Morocco, where it is common between the rivers Tensift and Sous. A few scattered trees only are said to be found north of the Tensift; but it seems to be not infrequent in the hilly district between the Sous and the river of Oued Noun, making the total length of its area about 200 miles. Extending from near the coast for a distance of 30 or 40 miles inland, it is absolutely unknown elsewhere in the world. The trunk always divides at a height of 8 or 10 feet from the ground and sends out numerous spreading, nearly horizontal branches. The growth is apparently very slow, and the trees that attain a girth of 12 to 15 feet are probably of great antiquity. The minor branches and young shoots are beset with stiff, thick spines, and the leaves are like those of the olive in shape, but of a fuller green, somewhat paler on the under side. Unlike the olive, the wood is of extreme hardness, and seemingly indestructible by insects, as we saw no example of a hollow trunk. The fruit, much like a large olive in appearance, but varying much in size and shape, is greedily devoured by goats, sheep, camels, and cows, but refused by horses and mules; its hard kernel furnishes the oil which replaces that of the olive in the cookery of southern Morocco and is unpleasant to the unaccustomed palate of Europeans. (Adapted from *Hooker and Ball, A Tour in Morocco, p. 96.*)

For previous introduction, see S. P. I. No. 3490.



A NEW FOOD PLANT, THE HUAUHTZONTLI OF MEXICO. (CHENO-
PODIUM NUTTALLIAE SAFFORD, S. P. I. No. 46956.)

The unique inflorescence of this plant, in the stage shown in the photograph, is a favorite vegetable with the Mexican Indians. The flowering tips, or rather those on which seed is just beginning to ripen, are boiled or fried. These form, according to Mrs. Zelia Nuttall, for whom the plant was named, a very nutritious and appetizing dish. It should be tested in comparison with lamb's-quarters, of which it is a relative. (Photographed by Dr. W. E. Safford from a plant collected by Maximino Martinez, near the City of Mexico, July, 1918.)



A STRIKING SUBSHRUBBY MORNING-GLORY FROM BRAZIL. (*IPOMOEA FISTULOSA* MART., S. P. I. No. 46966.)

This handsome subshrubby plant is said by Mr. P. H. Dorsett to be a feature of the roadsides around Joazeiro, Brazil. It grows to a height of 8 or 10 feet and produces its lavender-pink flowers in great profusion. The bell-shaped corollas are about 3 inches long. (Photographed by P. H. Dorsett, Joazeiro, Bahia, Brazil, February 24, 1914; P14943FS.)

46970 to 46972. RIBES VULGARE Lam. Grossulariaceæ.**Garden currant.**

From Langport, Somerset, England. Plants purchased from Kelway & Son. Received January 7, 1919.

The following varieties of garden currants have been purchased for experimental use in the Department.

46970. *Kelway's Somerset.*

46972. *Kelway's Latest of All.*

46971. *Kelway's Eclipse.*

46973 and 46974.

From Ecuador. Presented by Dr. J. N. Rose, associate curator, United States National Herbarium. Received January 10, 1919.

46973. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ. Algaroba.
(*P. juliflora* Swartz.)

"Seeds of the mesquite, called algaroba, which in Ecuador is a very common shrub or tree on the dry parts of the coast. The pods, which are produced in great abundance, are very sweet and form a staple food for horses, mules, and cattle. The wood is very hard and of a dark-brown color. It makes fine fence posts, tool handles, the very best of charcoal, and is an important firewood on railroad engines." (*Rose.*)

For previous introduction, see S. P. I. No. 45165.

46974. HYMENOCALLIS sp. Amaryllidaceæ.

"Bulbs of *Hymenocallis* obtained through Mr. Alfred Cartwright, at Guayaquil. Mr. Cartwright states that this plant has beautiful white flowers with long, slender, almost filiform, pendent petals." (*Rose.*)

46975. PYRUS sp. Malaceæ.**Pear.**

From Canton, China. Fruits presented by Mr. G. Weidman Groff. Received January 14, 1919.

"Wild pear, known in Cantonese as *ye sha lu*. Collected on hills near Canton. A possible stock for pear." (*Groff.*)

46976. ORYZA SATIVA L. Poaceæ.**Rice.**

From Nanhsuchou, Anhwei, China. Presented by Mr. J. L. Buck. Received January 17, 1919.

"Early white fragrant rice (nonglutinous) from Hsinghwa (near Yengcheng) Kiangsu, China." (*Buck.*)

46977. CANAVALI ENSIFORME (L.) DC. Fabaceæ.**Jack bean.**

From China. Presented by Rev. J. E. Shoemaker, Yuyao, via Ningpo. Received January 23, 1919.

"A Chinese white bean of low-growing habit, which bears a mammoth pod." (*Shoemaker.*)

46978. PYRUS SEROTINA Rehder. Malaceæ.**Pear.**

From Japan. Presented by the Arnold Arboretum, Jamaica Plain, Mass.
Received February 7, 1919.

"Wilson No. 11162."

"This species seems to be most closely related to *Pyrus bretschneideri* Rehder, which is easily distinguished by the leaves being broadly cuneate at the base, by the smaller flowers, and by the yellow color of the fruit. Its leaves resemble closely those of *P. ovoidea* Rehder, so that it seems impossible to distinguish these two species with certainty without flowers or fruits; in fruit, however, the persistent calyx of the ovate yellow fruit of *P. ovoidea* presents a good character, and the flowers of *P. ovoidea* may be distinguished by the styles being pubescent at the base. This species was introduced by E. H. Wilson in 1909. This pear and probably other brown-fruited species are called by the Chinese *tang-li*." (*Proceedings of the American Academy of Arts and Sciences*, vol. 50, No. 10.)

For previous introduction, see S. P. I. No. 46702.

46979. PYRUS KAWAKAMII Hayata. Malaceæ.**Pear.**

From Formosa. Presented by the Arnold Arboretum, Jamaica Plain, Mass. Received January 20, 1919.

(Wilson No. 10876.)

"This pear is a native of the island of Formosa and resembles *Pyrus lindleyi*, from which it differs in having the leaves acute at both ends. The punctate, reddish fruits are globose and about one-third of an inch in diameter. (Adapted from *Journal of the College of Science of the Imperial University, Tokyo*, vol. 30, p. 99.)

46980. TAIWANIA CRYPTOMERIODES Hayata. Pinaceæ.

From Formosa. Presented by the Arnold Arboretum, Jamaica Plain, Mass. Received February 7, 1919.

(Wilson No. 10853.)

"The loftiest tree [in the forests of Formosa] is the *Taiwania*, which rears its small moplike crown well above all its neighbors. The average height of this tree is from 150 to 180 feet, but specimens exceeding 200 feet are known. The trunk is sometimes as much as 30 feet in girth, quite straight and bare of branches for 100 to 150 feet. It is a strikingly distinct tree, singularly like an old *Cryptomeria*, and both trees suggest gigantic Lycopods. In the dense forests the crown is small, dome shaped or flattened, the branches few and short, and one wonders how so little leafage can support so large a tree. When the top is broken by storms, the lateral branches assume an erect position. In the more open forest the branches are massive and wide spreading, the crown oval or flattened, and on small trees the branchlets are often pendent. The *Taiwania* sheds its smaller inner branches as do *Cryptomeria*, *Cunninghamia*, and *Sequoia*." (*Journal of the Arnold Arboretum*, vol. 2, p. 35.)

46981. TIGRIDIA PAVONIA (L. f.) Ker. Iridaceæ. **Tiger flower.**

From Coyacan, Mexico. Bulbs and seeds presented by Mrs. Zelia Nuttall, through Wilson Popenoe. Received January 23 and 27, 1919.

"*Cacomite*. Among the plants used as food by the ancient Mexicans, the *cacomite* is one which has received comparatively little attention in modern times.

"This species is common on the slopes of the valley of Mexico, and is still used by the Indians to a limited extent. Doubtless, it was of much greater importance as a foodstuff in ancient times than it is to-day. Mrs. Nuttall has planted in her garden a number of bulbs gathered on the hillsides near her home and has found that they multiply rapidly and require no cultural attention. When in bloom, the plants are beautiful, their flowers varying from yellow to deep scarlet in color. As an ornamental plant the *Tigridia* is already known in other countries, but the use of its bulbs as an article of food is not common outside of Mexico. When fully developed, the bulbs are slightly less than 2 inches in diameter. For eating, they are usually boiled, or parboiled and fried. When boiled they are mealy and have a very agreeable flavor somewhat suggesting that of chestnuts.

"It is suggested by Mrs. Nuttall that the cacomite be given a careful trial in the southern United States as a root crop. When grown from seed it requires two seasons for the bulbs to reach maturity, but they demand very little cultural attention, and the ornamental character of the flowers should make the cultivation of the cacomite very attractive to those who are interested in new and rare vegetables." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 11627, Inv. 11, p. 63 ("Undetermined"), which has been identified as *Tigridia pavonia*.

46982. *TUTCHERIA SPECTABILIS* (Champ.) Dunn. Theaceæ.

From Hongkong, China. Presented by the Botanical and Forestry Department. Received January 23, 1919.

A handsome, ornamental small tree or shrub, indigenous to the island of Hongkong. The leaves are alternate, short petioled, coriaceous, and shining. The flowers are about 2½ inches in diameter, usually having seven white, roundish obovate petals. The fruit, which is the size of a small apple, retains at the base the persistent sepals, and contains several fairly large seeds. The plant flowers in May and fruits in November. (Adapted from *Champion, Transactions of the Linnean Society, vol. 21, p. 111.*)

For previous introduction, see S. P. I. No. 45720.

46983. *MANISURIS EXALTATA* (L. f.) Kuntze. Poaceæ.

(*Rottboellia exaltata* L. f.)

From the Philippine Islands. Sent by Dr. W. H. Weston to the Office of Acclimatization and Adaptation of Crop Plants. Received January 9, 1919.

From fields near the experiment station farm, College of Agriculture, Los Banos, Philippine Islands. This seed was introduced for the use of the officials of the Office of Acclimatization and Adaptation of Crop Plants.

For previous introduction, see S. P. I. No. 39927.

46984. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

From Ambato, Ecuador. Bud sticks collected by Dr. J. N. Rose. Numbered January, 1919.

"Avocado from Ambato. Fruit brownish to black, but sometimes green or red, 2½ to 4 inches long. A fine fruit but small." (*Rose.*)

"Budwood of an avocado from Ambato, with sassafras-scented leaves. This variety apparently belongs to the Mexican race. It is likely to be hardier than

most other varieties and should be tested in sections of the United States which are slightly too cold for avocados of the West Indian or Guatemalan races. It will probably prove to be a small-fruited variety of rich flavor, as the Mexican race usually produces fruits of this character." (*Wilson Popenoe*.)

46985 to 46999.

From Rio de Janeiro, Brazil. Presented by Mr. H. A. Cardinell, Ministerio da Agricultura. Received January 23, 1919.

"I am sending you sample quantities of seeds of forage and fiber plants which arrived last week from the States of Matto Grosso and Amazonas. I happened to be at the botanical gardens when this collection arrived there, so I stayed and made you a little collection. These seeds were collected by Dr. Geraldo Kuhlmann, who is the collector of the Rondon Commission." (*Cardinell*.)

46985. *ABUTILON RAMIFLORUM* St. Hil. Malvaceæ.

"Fiber plant called *Uanchuma*, a very delicate fiber from Matto Grosso."

46986. *CROTALARIA FOLIOSA* Benth. Fabaceæ.

"Fiber plant from Matto Grosso, Brazil."

46987. *CROTALARIA MAYPURENSIS* H. B. K. Fabaceæ.

"From 'Pimento Bueno,' Matto Grosso. Grows on all soils."

46988. *HIBISCUS SPATHULATUS* Garke. Malvaceæ.

"Fiber plant from Matto Grosso."

46989. *PAVONIA PANICULATA* Cav. Malvaceæ.

"Fiber plant from the State of Amazonas, which grows on all alluvial sandy-clay soils."

46990. *SIDA RHOMBIFOLIA CANARIENSIS* (Willd.) Schum. Malvaceæ.

"Fiber plant from 'Barao de Capanema,' (linha telegraphica), Matto Grosso."

46991. *SIDA RHOMBIFOLIA SURINAMENSIS* (Miquel) Schum. Malvaceæ.

"Fiber plant from 'Pimento Bueno,' Matto Grosso."

46992. *TRIUMFETTA SEMITRILOBA* Jacq. Tiliaceæ.

"Fiber plant; seed collected at 'Presidente Penna,' Matto Grosso."

46993. *WISSADULA PERIPLOCIFOLIA* (L.) Griseb. Malvaceæ.

"Fiber plant from 'Barao de Melgaco,' Matto Grosso."

46994. *AXONOPUS* sp. Poaceæ.

Grass.

"From Matto Grosso."

46995. *AXONOPUS* sp. Poaceæ.

Grass.

"From Matto Grosso; on sandy-clay soil."

46996. *CASSIA FLEXUOSA* L. Cæsalpiniaceæ.

"Forage plant from 'Rio Sacre,' in the State of Matto Grosso."

46997. *ERAGROSTIS MAYPURENSIS* (H. B. K.) Steud. Poaceæ.

Grass.

"From Matto Grosso."

46985 to 46999—Continued.

46998. *ICHNANTHUS CALVESCENS* (Nees) Doell. Poaceæ. **Grass.**

"Called *Papuan*, and considered the best forage plant in Matto Grosso."

46999. *PASPALUM MULTICAULE* Poir. Poaceæ. **Grass.**

"A good forage annual grown on all soils in Matto Grosso."

47000. *CICER ARIETINUM* L. Fabaceæ. **Chick-pea.**

From Mexico. Obtained through Mr. S. W. Augenstein, steward, Cosmos Club, Washington, D. C., from General Alvaro Obregon, Sinaloa, Mexico. Received January 31, 1919.

Chick-peas, or garbanzos, grown on the ranch of Gen. Obregon in the State of Sinaloa, Mexico. Immense quantities of this grain are grown in Mexico and shipped to Spain, where it forms a staple article of food.

47001. *DIOSCOREA ALATA* L. Dioscoreaceæ. **Yam.**

From Florida. Tubers of a yam growing at the Plant Introduction Field Station, Miami. Obtained April 7, 1905, from Mr. H. W. Steadman, Lemon City, Fla. Its previous history is unknown. Numbered for convenience in distribution. Received January, 1919.

"A white-fleshed yam of good quality, suitable for cultivation in southern Florida. It is thought to be identical with the Agua yam of the West Indies. The plant has been described as a rampant grower and a good yielder. A single tuber may weigh as much as 15 pounds. This yam may be baked or boiled and prepared in other ways, much like potatoes. It is best to pare before boiling. This variety is more moist than most others and, after boiling, usually may be mashed and beaten without milk. It is ivory white in color, but when beaten, after being boiled and mashed, it becomes nearly pure white." (R. A. Young.)

47002 and 47003. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ. **Dasheen.**

Tubers growing at the Plant Introduction Field Station, Brooksville, Fla. Numbered January, 1919, for convenience in recording distribution. Descriptive notes by Mr. R. A. Young.

47002. "*Sacramento*. From Sacramento, Calif. Procured by Mr. Peter Bisset in a Chinese store, under the name of 'China potato.' Received November, 1913. A dasheen similar in leaf characters to the *Trinidad* variety. The name *Sacramento* is given to it because the variety was obtained in that city. As compared with the *Trinidad* dasheen, the *Sacramento* variety has considerably fewer and larger tubers. Both corms and tubers are more regular in form, and when cooked they are generally lighter in color and are not so dry; this variety has much less flavor, however, than the *Trinidad* dasheen."

47003. "*Ventura*. From Ventura, Calif. Presented by Mr. L. B. Hogue, who obtained it several years previously from a local Chinese gardener. Received in March, 1916. The name *Ventura* is given to signify the place whence the variety was obtained. A variety of dasheen similar in general appearance to the *Trinidad* dasheen. The bases of the

47002 and 47003—Continued.

leafstalks and the buds of the corms and tubers are distinctly more reddish in color than in the latter variety, however. The quality is similar to that of the *Trinidad* variety."

47004. PERSEA AMERICANA Mill. Lauraceæ.**Avocado.**

(*P. gratissima* Gaertn. f.)

From the City of Mexico, Mexico. Collected in the market by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received January 20, 1919.

"A small-fruited, Mexican avocado for growing stocks on which to bud the Guatemalan introductions and other choice varieties." (*Wilson Popenoe.*)

47005 and 47006. PENNISETUM SETOSUM (Swartz) L. Rich. Poaceæ. Grass.

From Rio de Janeiro, Brazil. Presented by Mr. H. A. Cardinell, Ministerio da Agricultura. Received January 23, 1919.

47005. "Forage plant found on all soils in the State of Matto Grosso."

47006. "From Matto Grosso."

47007. COELOCOCCLUS AMICARUM (Wendl.) W. F. Wight. Phœnicaceæ. Ivory-nut palm.

From Honolulu, Hawaii. Fruits presented by Dr. Harold L. Lyon, Experiment Station of the Hawaiian Sugar Planters' Association. Received January 23, 1919.

"These fruits were collected a few days ago on the premises of Mr. John Scott, of Hilo. Mr. Scott purchased fruits of this palm from a sea captain many years ago and succeeded in rearing one plant which is now a large, handsome palm, the only fruiting specimen in these islands." (*Lyon.*)

"A pinnate-leaved palm introduced into Guam from the Caroline Islands. The nuts are of an ivorylike texture and are exported from the Carolines to Germany for button making.* The spheroid fruit, about 7 centimeters long and 8 centimeters in diameter, has a reddish brown, glossy, scaly shell. The surface of the seed is glossy, black, and thickly striped but not furrowed. The allied species of the Solomon Islands (*Coelococcus solomonensis*) has a straw-colored shell, and that of *C. vitiensis* of Fiji, which is not used in the arts, is yellow. The inflorescence of this genus has not yet been described. In some of the Solomon Islands the natives prepare sago from the pith of the species growing there. It is said to keep well and not to be injured by salt water, so that it is a valuable food staple to take with them on their canoe voyages." (*Contributions from the U. S. National Herbarium, vol. 9, p. 244.*)

47008. MILLETTIA RETICULATA Benth. Fabaceæ.

From Houston, Tex. Cuttings presented by Mr. Charles E. Hogans. Received January 24, 1919.

"Cuttings of a wistaria which, I believe, is rare in this country. It was given to me by a Japanese who had imported a few plants; he called it 'Formosan wistaria.' It blooms here in August, holds blooms for over 30 days, and the flowers are a dark red. It holds its leaves all winter if the weather is not extreme, and they are of a darker green than those of other varieties." (*Hogans.*)

47009. HOLCUS SORGHUM L. Poaceæ.**Sorghum.***(Sorghum vulgare Pers.)*

From Angola, Africa. Presented by Rev. M. W. Ennis, Cuma, Benguela.
Received January 28, 1919.

"Seed of kafir. From the ordinary native *ovasa*, which is white with a buff bloom, I selected certain heads which produced a red grain, and from the plants grown I selected a white strain (which seems to be a variety of the Blackhull kafir). This grows vigorously on any land suited to the growth of maize. People from the Cape say that it is the strongest growing kafir that they ever saw. It makes a good flour which is not as liable to discoloration when used in baking as the flour made from the ordinary kafir. It requires a long season." (*Ennis.*)

47010 to 47015.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received January 27, 1919.

47010. CAPSICUM ANNUUM L. Solanaceæ.**Red pepper.**

"Seed of a very pungent, large, red pepper, originally from Costa Rica, that might prove superior to the ordinary chili. Seed should be saved for local distribution." (*Wester.*)

47011 to 47015.

"Spores of five ferns, probably *Cyathea*, *Marattia*, *Pteris*, and *Polypodium* spp. All these grow near sea level on Basilan in a hot, damp climate. The *Cyathea* and *Marattia* are especially attractive." (*Wester.*)

47011. CYATHEA sp. Cyatheaceæ.**Fern.****47012 and 47013. MARATTIA spp. Marattiaceæ.****Fern.****47014. POLYPODIUM sp. Polypodiaceæ.****Fern.****47012 and 47013, MARATTIA spp. Marattiaceæ.****Fern.****47016. SPIRÆA sp. Rosaceæ.****Spirea.**

From Chefoo, China. Presented by Mr. A. Sugden. Received January 27, 1919.

"Seeds of our big white spirea." (*Sugden.*)

47017 to 47057. Poaceæ.**Grasses.**

From Para, Brazil. Presented by Sr. André Goeldi through Mr. George H. Pickerell, American consul. Received January 7, 1919. Quoted notes by Mr. Goeldi.

"These species of grasses form the gramineous covering of the campos of Marajo Island."

[The economic value of most of these grasses is unknown. They will be tested by the agronomists of the United States Department of Agriculture.]

47017. ANDROPOGON BREVIFOLIUS Swartz.

"No. 19."

47018. AXONOPUS AUREUS Beauv.

"No. 23."

47017 to 47057—Continued.**47019.** *AXONOPUS COMPRESSUS* (Swartz.) Beauv.

"No. 14."

47020. *AXONOPUS* sp.

"No. 15."

47021. *CHAETOCHELOA IMPRESSA* (Nees) Hitchc. and Chase.

"No. 16."

47022. *CHAETOCHELOA* sp.

"No. 21. Not native in Marajo. I found this kind growing in plant pots and plant boxes which contained fruit trees brought from the city of Para. Even in Para itself this species is not native and I have never found it on any of my collecting trips."

47023. *ERAGROSTIS GLOMERATA* (Walt.) L. H. Dewey.

"No. 36."

47024. *ERIOCHLOA* sp.

"No. 26."

47025. *HOMALOCENCHRUS HEXANDRUS* (Swartz) Kuntze.

"No. 18."

47026. *LEPTOCHELOA VIRGATA* (L.) Beauv.

"No. 38."

47027. *MESOSEETUM LOLIIFORME* (Hochst.) Chase.

"No. 13."

47028. *OLYRA LATIFOLIA* L.

"No. 41."

47029. *ORYZA LATIFOLIA* Desv.

"No. 1. A kind of native rice, growing on not inundated soil in Marajo. It is an interesting kind for several reasons. In the first place, it is the tallest I ever heard of, growing sometimes to a height of 8 feet. In the second place, it is a perennial kind, growing in large isolated bunches for several years, flowering and bearing seeds the whole year round. Its leaves are very broad. The kernels may not have any industrial or culinary value, but as a cattle feed the green plant might be useful. Besides this, I consider this kind interesting from a phytogeographical standpoint, demonstrating that real native kinds of rice are to be found in the Amazonian region."

47030. *PANICUM AQUATICUM* Poir.

"No. 20."

47031. *PANICUM MAXIMUM* Jacq.

"No. 24. A guinea grass of gigantic growth, completely different from the common one we have here. The common guinea grass has narrow leaves and reaches to a height of about 4 feet. This kind is stronger and much taller, having a very broad leaf and reaching a height of 7 or more feet. It is not a native grass of this country, but was introduced from Jamaica in soil which was packed around banana suckers, growing among the banana trees and especially where the suckers had been laid down before planting."

47032. *PANICUM MAXIMUM* Jacq.

"No. 25. The common guinea grass; introduced, not native."

47017 to 47057—Continued.**47033.** *Panicum pilosum* Swartz.

"No. 33."

47034. *Paspalum conjugatum* Berg.

"No. 35."

47035 to 47037. *Paspalum densum* Poir.

47035. "No. 6. An interesting kind. When it is flowering or even bearing ripe seeds, the whole flower or seed bunch secretes a thick sweet siruplike liquid in considerable quantity, which is much sought after by wasps, ants, bees, and other sweet-liking insects."

47036. "No. 7."**47037.** "No. 27."**47038.** *Paspalum denticulatum* Trin.

"No. 28."

47039. *Paspalum larranagai* Arech.

"No. 5. Not native in the Amazonian region, but introduced."

47040 to 47042. *Paspalum millegranum* Schrad.**47040.** "No. 3."**47042.** "No. 29."**47041.** "No. 22."**47043 to 47049.** *Paspalum plicatulum* Michx.**47043.** "No. 8."**47047.** "No. 17."**47044.** "No. 9."**47048.** "No. 30."**47045.** "No. 10."**47049.** "No. 31."**47046.** "No. 11."**47050.** *Paspalum virgatum* L.

"No. 39."

47051 to 47054. *Paspalum* sp.**47051.** "No. 2."**47053.** "No. 32."**47052.** "No. 12."**47054.** "No. 42."**47055.** *Pennisetum setosum* (Swartz) L. Rich.

"No. 34."

47056. *Syntherisma* sp.

"No. 40."

47057. *Valota insularis* (Elmg.) Chase.

"No. 37."

47058. *Dolichos lablab* L. Fabaceæ.**Bonavist bean.**

From West Indies. Presented by the Cotton Research Department, St. Vincent, through Mr. S. Cross Harland. Numbered February, 1919.

"Seed of a bush form of *Dolichos lablab*. The seeds are white, and the eating qualities are distinctly good. Under our conditions the plants commence to bloom in about 5 weeks from sowing, and the whole crop is over in about 10 weeks." (*Harland.*)

47059. OXALIS CRENATA Jacq. Oxalidaceæ.

From Paris, France. Tubers presented by Mr. Stuart R. Cope. Received January 31, 1919.

"I am sending you a couple of tubers of *Oxalis crenata*, which has recently made its appearance in the markets here as a vegetable. It is directed to be cooked as crosnes (*Stachys tuberifera*), which is a common vegetable here and usually fried in fat, but I am informed that this *Oxalis* may also be boiled and mashed like turnips." (Cope.)

47060. MIKANIA sp. Asteraceæ.

From Oran, Argentina. Presented by Mr. S. W. Damon. Received January 23, 1919.

"Seeds received from Antonio de Llamas, Corrientes, Province de Corrientes, in reply to my request for seeds of *Stevia rebaudiana*, who says, 'I am sending you seeds of a plant called *yerba dulce, cad-eeba, nungà-catu* (sweet herb) from Curuguati. I doubt that they are *Stevia*. They remind me of the genus *Mikania*.'" (Damon.)

47061 to 47092.

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received January 31, 1919.

Peas introduced for the specialists of the United States Department of Agriculture, who are experimenting with disease-resistant varieties.

47061. PISUM ARVENSE L. Fabaceæ. Field pea.
Nain mange-tout à large cosse.

47062 to 47092. PISUM SATIVUM L. Fabaceæ. Garden pea.

47062. *Quarante deux de Sarcelles.*

47063. *Michaux de Hollande.*

47064. *Michaux de Ruelle.*

47065. *Michaux ordinaire.*

47066. *Merveille d'Etampes.*

47067. *Serpette améliorée à longue cosse.*

47068. *Sabre.*

47069. *De Clamart.*

47070. *Gros carré vert Normand.*

47071. *Colosse.*

47072. *Ridé gros blanc à rames.*

47073. *Nain à chassis très hâtif.*

47074. *Nain très hâtif d'Annonay.*

47075. *Du Chemin longue.*

47076. *Nain très hâtif Gontier à grain vert.*

47077. *Très nain Couturier.*

47078. *De Clamart nain hâtif.*

47079. *Petite Merveille.*

47080. *Sans parchemin hâtif longue cosse.*

47081. *Sans parchemin beurre.*

47082. *Mange-tout à rames grain vert.*

47061 to 47082—Continued.

47083. *Sans parchemin corne de blier.*
 47084. *Sans parchemin de St. Desirat.*
 47085. *Sans parchemin trs nain htif a chssis.*
 47086. *Nain mange-tout De Barbieux.*
 47087. *Prince Albert.*
 47088. *Le Bienfaiteur.*
 47089. *Caractacus.*
 47090. *Delices des gourmets.*
 47091. *d'Auvergne (Pois serpette).*
 47092. *Serpette vert.*

47093 and 47094. PYRUS COMMUNIS L. Malace.**Pear.**

From St. Petersburg, Fla. Cuttings presented by Mr. Martin Campas.
 Received February 4, 1919.

47093. "I was favorably impressed with this pear. It is attractive in appearance, in texture, and in quality. It seemed to me to be a very great improvement over the Kieffer and over any other variety that I know of which is adapted to the far South. If the tree is satisfactory and is reasonably resistant to blight, it seems to me that there may be something in this variety which would be worth considering very carefully in connection with the planting of pears in the South."
 (H. P. Gould.)

47094. Another pear highly recommended by the sender.

47095 to 47101.

From Johannesburg, Africa. Presented by Mr. J. Burt Davy. Received February 4, 6, 7, and 10, 1919.

47095. *ACOKANTHERA VENENATA* (Thunb.) Don. Apocynace.

"Along the coast at Kuyona, South Africa." (Davy.)

This shrub or gnarled tree, sometimes 14 feet high, is a native of the coast region of South Africa, and is usually found along streams. It bears axillary corymbs of small, white to pink, sweet-scented flowers and globose purplish black fruits 1 inch in diameter. The thick, coriaceous leaves are ovate to lanceolate and from 1 to 4 inches long. The root is used by the natives for poisoning arrows. (Adapted from *Thiselton-Dyer, Flora Capensis, vol. 4, sect. 1, p. 500.*)

47096. *ALLIUM CEPA* L. Liliace.

Onion.

"Yellow Cape onion." (Davy.)

47097. *ANNONA CHERIMOLA* Mill. Annonace.

Cherimoya.

"Grown at Maritzburg, Natal, South Africa (Warm Temperate Zone)."
 (Davy.)

47098. *LAGENARIA VULGARIS* Seringe. Cucurbitace.

Gourd.

"Markalas." (Davy.)

47099. *MIMUSOPS CAFFRA* E. Meyer. Sapotace.

A somewhat hoary or glaucous evergreen tree or shrub forming a large proportion of the sea-dune vegetation, but also extending inland

47095 to 47101—Continued.

on sandy soils. On the dunes it grows down to the water line, fully exposed to sea winds, and where these winds prevail is consequently usually dwarfed and heavily branched from the base. In shelter it gets up to about 10 meters in height and 30 to 45 centimeters in diameter, but even there it is heavily branched and very gnarled and crooked, and consequently yields first-rate knees, etc., for boat building. The leaves are firmly coriaceous and widely obovate. The flowers are usually in clusters of two to four in the axils along the branch. The fruit, which is red, is 2 centimeters long, tapers to a point, and is relished by children. Abundant along the coast and through Mchopes; also in Cape Colony and Natal. (Adapted from *Sim, Forest Flora and Forest Resources of Portuguese East Africa*, p. 80.)

47100. RHOICISSUS ERYTHRODES (Fres.) Planch. Vitaceæ.
(*Vitis erythrodes* Fres.)

A shrubby, suberect plant, native to Abyssinia. The leathery compound leaves are made up of three leaflets, the terminal one obovate, 2 to 3 inches long, the lateral ones broadly ovate; all are smooth and deep green above, but covered with fine gray pubescence below. The scarlet flowers occur in small lateral cymes, and the globose fruits are about half an inch in diameter. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 1, p. 401.)

47101. TRITONIA sp. Iridaceæ.

"Ornamental from the extreme south of Natal, on the Pondeland border." (*Davy*.)

47102 to 47107. Poaceæ.**Grasses.**

From Pretoria, Union of South Africa. Presented by Mr. Alex Holm, Department of Agriculture. Received February 6, 1919. Quoted notes by Mr. Holm.

"Native grasses of the Transvaal."

47102. ANDROPOGON sp.

"No. 2. A useful fodder grain."

Received as *A. purpureo-sericeus* Hack., but it does not agree with the material of that species in the United States National Herbarium.

47103. ARUNDINELLA ECKLONII Nees.

"No. 3. A useful fodder grain."

47104. CHLORIS GAYANA Kunth.

Rhodes grass.

"No. 4. A useful fodder grain."

47105. CHLORIS PETRAEA Thunb.

"No. 5. A useful fodder grain."

47106. CYMBOPOGON POLYNEUROS (Steud.) Stapf.

"No. 1. Used commercially for the extraction of oil."

47107. PENNISETUM RUPPELLII Steud.

"No. 6. Is valuable horticulturally."

47108. ANNONA MURICATA L. Annonaceæ. Soursop.

From San Lorenzo, Colombia. Presented by Mr. M. T. Dawe. Received February 7, 1919.

"A variety from the Cauca Valley, with roundish fruits of moderate size." (Dawe.)

A small, evergreen, tropical American tree, about the size of a peach tree, with leathery, ill-smelling, glossy leaves, large flowers with fleshy exterior petals, and very large fleshy green fruits with white, juicy, pleasantly subacid pulp. It is commonly cultivated in the Tropics of the Old World. A fine drink is made from the juice, and excellent jelly and preserves are prepared from the pulp. It is easily propagated from seeds or by budding. (Adapted from Bailey, *Standard Cyclopedia of Horticulture*, vol. 1, p. 292.)

For previous introduction, see S. P. I. No. 45908.

47109 to 47114. ZEA MAYS L. Poaceæ. Corn.

From Rio de Janeiro, Brazil. Presented by Mr. H. A. Cardinell, Ministerio da Agricultura. Received February 6, 1919.

"A rather curious collection of corn grown by the various Indian tribes of the States of Matto Grosso and Amazonas. This corn came from an exhibit prepared by a commission from that district for the last national corn show held in Rio de Janeiro in August, 1918. The commission informed me that this corn is absolutely wild in Matto Grosso and the Indians have made no attempt at its improvement. The ears I am sending were grown by the Amazon Indians more than 1,500 kilometers (930 miles) from the Madeira River, which is a branch of the River Amazon and forms in part the boundary between the two above-named States; that is, it was brought 930 miles before it reached that river. This will give you an idea of the distance this corn traveled before reaching Rio de Janeiro." (Cardinell.)

47109. No. 1. Kernels yellow with dark-red streaks.

47110. No. 2. Kernels dusky brownish red.

47111. No. 3. Kernels tawny.

47112. No. 4. Kernels dusky red, almost black.

47113. No. 5. Kernels yellow with dark-red streaks.

47114. No. 6. Kernels pale yellow and small.

47115. ORYZA SATIVA L. Poaceæ. Rice.

From Nanhsuchou, Anhwei, China. Presented by Mr. J. L. Buck. Received February 7, 1919.

"Red fragrant rice (nonglutinous) from Hsinghwa (near Yengcheng) Kiangsu, China." (Buck.)

47116 and 47117.

From Haiti. Presented by Mr. Chester J. Hunn, Ithaca, N. Y. Received February 8, 1919.

47116. OBYZA SATIVA L. Poaceæ. Rice.

"Rice paddy collected in Haiti in 1917, at a newly established experiment station conducted by the United States Marines a few miles south and west of Port au Prince." (Hunn.)

47116 and 47117—Continued.**47117. ZEA MAYS L. Poaceæ.****Corn.**

"Corn collected in Haiti in 1917 at a newly established experiment station conducted by the United States Marines a few miles south and west of Port au Prince. This corn was selected from among the ear corn purchased for the animals, and the exact locality from which it came is unknown, except that it was in the southern peninsula to the west of a line drawn from Port au Prince to Jacmel." (*Hunn.*)

47118. ARISTOLOCHIA RINGENS Vahl. Aristolochiaceæ.

From Las Sabanas, Panama. Presented by Mr. G. F. Dietz. Received February 10, 1919.

"Seeds of a vine from Jamaica called '*gallito.*'" (*Dietz.*)

A tall, slender, twining, glabrous plant with broadly orbicular-reniform leaves dull pale green above and glaucous below. The flowers are 7 to 10 inches long, pale green, marbled and reticulated with black-purple. It is found in Venezuela and in the West Indies. (Adapted from *Curtis's Botanical Magazine*, pl. 5700.)

47119. HIBISCUS SABDARIFFA L. Malvaceæ.**Roselle.**

From Ramrod Key, Fla. Presented by Mr. J. R. Fraser. Received February 10, 1919.

"In my experiments with the roselle, I observed one plant that seemed somewhat superior to the others, and after the first picking I let it mature its seed. The first picking yielded 8 pounds of fruit [the usual yield is 4 pounds of fruit per plant], and the second picking yielded 10 pounds of fruit, a total of 18 pounds per plant. The calyces on this plant were 2½ inches in length and 1½ inches in diameter at the base." (*Fraser.*)

For previous introduction, see S. P. I. No. 46001.

47120. GARCINIA MANGOSTANA L. Clusiaceæ.**Mangosteen.**

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received February 11, 1919.

"This delicious fruit is about the size of a mandarin orange, round and slightly flattened at each end, with a smooth, thick rind, rich red-purple in color, which, when cut, exposes the white segments, five, six, or seven in number, lying loose in the cup. The cut surface of the rind is a most delicate pink in color and is studded with small yellow points. The separate segments are between snow white and ivory in color, and are covered with a delicate network of fibers. As one poises the dainty bit of snowy fruit on his fork and looks at the empty pink cup from which it has been taken, he hardly knows whether the delicate flavor or the beautiful coloring of the fruit pleases him more. The texture of the mangosteen pulp much resembles that of a well-ripened plum, but is extremely delicate, and the flavor is quite indescribably delicious. This fruit produces no feeling of satiety, such as the banana and the mango do, for there is little substance to the delicate pulp." (*David Fairchild.*)

For previous introduction and further description, see S. P. I. No. 46204.

**47121. CARDIOSPERMUM HALICACABUM MICROCARPUM Blume. Sap-
indaceæ. Balloon vine.**

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received January 27, 1919.

"An annual climbing vine, native of Zamboanga, with balloonlike seed pods that, together with the delicate foliage, make the plant an attractive ornamental." (*Wester.*)

47122. RUBUS GLAUCUS Benth. Andes berry.

From Palmira, Colombia. Presented by Charles J. Eder. Received February 6, 1919.

"Seeds from Palmira, Valle, Republic of Colombia; altitude 6,000 feet; average temperature 65° F." (*Eder.*)

Mora de Castilla. This berry, which appears to grow wild, attains a size and shape comparable to that of our best cultivated varieties, and to my mind has a better flavor than any of them. (Adapted from *notes by Dr. F. M. Chapman.*)

Cuttings of this berry previously received were given S. P. I. No. 46800.

**47123. ARTHROSTYLIDIUM CAPILLIFOLIUM Griseb. Poaceæ.
Climbing bamboo.**

From New Providence, Bahama Islands. Plants presented by Father C. N. Field and Mr. W. F. Doty, American consul, Nassau. Received February 11, 1919.

"A climbing bamboo, 15 meters or more in height, repeatedly branching, swinging down from the trees in great curtains or festooning lower growth, with the linear or filiform blades crowded on short sterile branchlets, these arranged in dense whorls like great pompons at the nodes." (*Contributions from the U. S. National Herbarium, vol. 18, p. 397.*)

47124. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. Oil palm.

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received February 12, 1919.

This palm is very important economically. The fruit is used by the natives for food; an intoxicating drink is made from the juice of the stem; the leaf stalks and leaves are used for thatching the native houses; and the fleshy outer layer and the kernels of the fruit each yield a commercial oil—that from the fleshy part being the ordinary palm oil used in the manufacture of soap and candles and that from the kernels being the white or nut oil used for making margarine or artificial butter. It is a native of west tropical Africa and occurs over immense areas both wild and in cultivation. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, p. 538.*)

Dorsett, Shamel, and Popenoe, in Department of Agriculture Bulletin No. 445, mention the uses of this tree in Brazil, and in regard to the oil from the pulp say: "Dendé oil is an important food product, entering into the preparation of a number of dishes, some of which, such as vatapá, are considered peculiar to the region. While utilized by all classes of people, its greatest popularity is among the negroes, long familiarity having made dendé oil almost as indispensable to them as olive oil is to the Spaniard."

For previous introduction, see S. P. I. No. 45766.

47125. IPOMOEA COPTICA (L.) Roth. Convolvulaceæ.*(I dissecta Willd.)***Morning-glory.**

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received February 13, 1919.

A slender, trailing, annual vine generally distributed throughout the Tropics. The digitate leaves, 1 to 2 inches across, are divided into five deeply pinnatifid segments. The large, white flowers, often 6 inches long, are borne singly or in clusters of two or three. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa*, vol. 4, sect. 2, p. 176.)

47126. SALVIA HISPANICA L. Menthaceæ.**Chia.**

From San Luis Potosi, Mexico. Procured by Mr. Cornelius Ferris, jr., American consul. Received February 13, 1919.

"This seed was obtained in the semitropical region of the State of San Luis Potosi and is known simply as *chia*. It is the kind used in making the drink called *chia*." (*Ferris*.)

For previous introduction, see S. P. I. No. 46645.

47127. CROTALARIA INCANA L. Fabaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received February 14, 1919.

"A bushy, half-shrubby legume forming plants 3 to 6 feet high and 2 to 4 feet across. Flowers yellow." (*C. V. Piper*.)

For previous introduction, see S. P. I. No. 31593.

47128 and 47129. SOJA MAX (L.) Piper. Fabaceæ. Soy bean.

From Harbin, Manchuria. Presented by Mr. Lewis S. Palen. Received February 17, 1919. Quoted notes by Mr. W. J. Morse.

47128. "Straw-yellow soy beans obtained from Peiliatze, Manchuria."

47129. "Early black soy beans obtained from Peiliatze, Manchuria."

47130 and 47131. SOJA MAX (L.) Piper. Fabaceæ. Soy bean.

From Harbin, Manchuria. Presented by Mr. Charles H. Tuck. Received February 17, 1919. Quoted notes by Mr. W. J. Morse.

47130. "Early yellow soy beans grown in the vicinity of Harbin."

47131. "Early black soy beans grown in the vicinity of Harbin."

47132 to 47145. PRUNUS SERRULATA Lindl. Amygdalaceæ.**Flowering cherry.**

From Yokohama, Japan. Cuttings purchased from the Yokohama Nursery Co. Received February 18, 1919.

The following descriptions are either adapted from Miyoshi, "Japanische Bergkirschen." *Journal of the College of Science, Tokyo*, vol. 34, art. 1, or quoted from Wilson, "The Cherries of Japan." The times of flowering noted in the descriptions from Miyoshi, of course, are for Japan.

47132. "*Aryake*." Branches brown-gray, young leaves yellow-brown, inflorescence in two to four flowered long-pedunculate false umbels, blossoms white or delicate pink. Single and slightly double blossoms ap-

47132 to 47145—Continued.

pear on the same tree. Blossoms in mid-April. (*Miyoshi*, p. 98, under *P. serrulata* Lindl. forma *candida*.)

"Flowers pale pink, single or semidouble, very large and fragrant. This is a very striking form." (*Wilson*, p. 51, under *P. lannesiana* forma *ariake*.)

47133. "*Choshuhizakura*." A medium-sized tree with spreading top, brown-gray twigs, deep-red young leaves, inflorescence in two to four flowered pedunculate umbels or corymbs, flowers 4 centimeters in diameter and uniformly rose color. The red young leaves and rose-colored flowers make this cherry very attractive. Blossoming time, mid-April. (*Miyoshi*, p. 121, under *P. serrulata* Lindl. forma *splendens*.)

"Flowers pink, single or semidouble. This form is of little horticultural interest." (*Wilson*, p. 51, under *P. serrulata* var. *sachalinensis* forma *choshiuhizakura*.)

47134. "*Fugenzo*." A medium-sized tree with long, pendent inflorescences, two green leaflets in the flower bud, and striking full-blown flowers, red at first but soon becoming white. The flower buds open one after another, thus prolonging the blossoming time usually to the 1st of May. I have seen the last flower as late as the 1st of June. (*Miyoshi*, p. 123, under *P. serrulata* Lindl. forma *classica*.)

"One of the most beautiful of all cherries and now well known in gardens under the name of James H. Veitch. The flowers are rose pink, and the variety is distinguished by the presence of two leafy carpels in the center of each flower. Its Japanese name is *Kofugen* or *Benifugen*, and this and its white form (*alborosea*) are the only kinds of Japanese cherries which have green and leafy carpels." (*Wilson*, p. 39, under *P. serrulata* var. *sachalinensis* forma *fugenzo*.)

47135. "*Horinji*." A small tree with dark-gray twigs, yellowish brown young leaves, and flowers with roundish petals, the outer rank pink, the inner rank white. Blossoming time from the middle to the end of April. (*Miyoshi*, p. 110, under *P. serrulata* Lindl. forma *decora*.)

"This is a very beautiful form, with clusters of pale-pink double or semidouble flowers." (*Wilson*, p. 40, under *P. serrulata* var. *sachalinensis* forma *horinji*.)

47136. "*Kanzakura*." "Flowers single, pale pink, and rather small. A curious cherry which blooms in late winter, hence its Japanese name *Kanzakura*, i. e., winter cherry." (*Wilson*, p. 31, under *P. serrulata* var. *spontanea* forma *praecox*.)

47137. "*Kokonoye*." A small tree with erect slender branches, light-gray twigs, brownish green young leaves, inflorescence in two to four flowered pedunculate umbels or false umbels with uniformly pink flowers. Blossoms in mid-April. (*Miyoshi*, p. 107, under *P. serrulata* Lindl. forma *homogena*.)

47138. "*Kongozan*." "Flowers pink, single. This form is of little horticultural interest." (*Wilson*, p. 52, under *P. lannesiana* forma *kongozan*.)

47139. "*Oshimazakura*." A large tree with young leaves delicate brown turning to green, green peduncles, green calyces, and large, white, fragrant flowers in four to five flowered corymbs. (*Miyoshi*, p. 42, under *P. mutabilis* forma *speciosa*.)

47132 to 47145—Continued.

"As it came under my observation in Japan, this cherry is quick growing and obviously short lived. It makes a tree 6 to 10 meters tall with a trunk 1 to 2 meters in girth, and has thick spreading and ascending-spreading branches. The bark is pale gray and smooth even on old trees. The shoots are stout, usually with prominent lenticels, grayish at first and often passing to dull reddish purple before becoming finally pale gray. The leaves are glabrous and green, but as they open often have a more or less brownish, metallic luster; they are ovate or rarely obovate, abruptly caudate-acuminate, double-serrate, and the teeth are long-aristate. The flowers are fragrant, everywhere glabrous, white (pinkish in the bud) and may appear before or with the leaves; the peduncle is sometimes almost wanting; usually it is from 2 to 4 centimeters long, but occasionally it is 6 centimeters and even more in length. The scaly involucral bracts are slightly viscid, the bracts subtending the pedicels are green, obovate, glandular-ciliate and very prominent. The fruit is ovoid, black, and lustrous.

"In this cherry the peduncle is extremely variable in length, often on the same individual tree, but this character has no taxonomic value in this or any other Japanese species. Varieties and forms have been based on this character, which is not only inconstant, but may vary from year to year. Koidzumi has distinguished the wild plant under the name of *speciosa*, but I can not discover any differences between a series of specimens from wild trees and those from cultivated trees. Koehme says this plant is in cultivation in Europe under the name *P. serrulata yoshino*. In Japan the vernacular name Yoshino is applied to *P. yedoensis* Matsumura, and not to any form of *P. lannesiana*. Koidzumi gives the vernacular name of Ohyamasakura to the wild plant. The cultivated plant and its forms are known as *oshimazukura* or as *sakura*." (Wilson, p. 45, under *P. lannesiana* forma *albida*.)

47140. "*Ranzan*." "Flowers single, pink, on long slender pedicels. This is a very pleasing form." (Wilson, p. 52, under *P. lannesiana* forma *ranzan*.)

47141. "*Shirayuki*." A moderately large tree with numerous closely crowded, erect-spreading branches, smooth brown-gray twigs, yellowish brown young leaves, and white flowers with hairy peduncles. Blossoming time, mid-April. (Miyoshi, p. 127, under *P. serrulata* Lindl. forma *nivea*.)

"With its large flowers this distinct form resembles *P. yedoensis* Matsumura, but the bracteoles show that it belongs to *P. serrulata* Lindl. The branches are erect-spreading and the flowers white, single or nearly so." (Wilson, p. 34, under *P. serrulata* var. *pubescens* forma *sirayuki*.)

47142. "*Shitoyefugen*." [No description of this variety has been found.]

47143. "*Surugadainioi*." A moderately large tree with brown-gray twigs, brownish red young leaves, and white, fragrant flowers. Blossoming time about the end of April. (Miyoshi, p. 132, under *P. serrulata* Lindl. forma *surugadai-odora*.)

"Flowers semidouble, fragrant, nearly white, pendulous on long slender pedicels. This is a late-flowering form." (Wilson, p. 51, under *P. lannesiana* forma *surugadai-odora*.)

47132 to 47145—Continued.

47144. "Takinioi." A medium-sized tree with spreading branches, brown-gray twigs, brown-red young leaves, flower buds with reddish tips, and white, fragrant flowers. Blossoming time about the end of April. (*Miyoshi*, p. 133, under *P. serrulata* Lindl. forma *cataracta*.)

"Flowers single, white, and very fragrant. The vernacular name [*takinioi*] signifies 'fragrance from cataract.'" (*Wilson*, p. 48, under *P. lannesiana* forma *cataracta*.)

47145. "Ukonzakura." A middle-sized tree with light yellow-green flowers, the outermost petals of which are pinkish on the outer surface. Blossoming time the last of April. A subform *luteoides* of lighter yellow-green color (*Asagi*) is found in Kohoku. (*Miyoshi*, p. 124, under *P. serrulata* Lindl. forma *luteovirens*.)

"Flowers greenish yellow, semidouble or double. This is a very striking cherry with large flowers, borne in great profusion. The Japanese names are Ukon and Asagi." (*Wilson*, p. 56, under *P. lannesiana* forma *grandiflora*.)

47146. CACARA EROSA (L.) Kuntze. Fabaceæ. Yam bean.
(*Pachyrhizus angulatus* Rich.)

From Miami, Fla. Collected by Mr. Edward Simmonds, Plant Introduction Field Station. Received February 13, 1919.

"A twining, wiry stemmed plant with large tuberous roots, occasionally grown in the West Indies. It has also been tested in Florida, and has proved to be quite successful at Miami. Its roots, which sometimes become very large, contain much starch." (*Wilson Popenoe*.)

An analysis of the tubers by the United States Bureau of Chemistry gave the following percentages: Total solids, 15.01; ash, 0.53; alkalinity of ash (as K_2CO_3), 0.59; acid (as H_2SO_4), 0.06; protein ($N \times 6.25$), 1.34; crude fat, 0.21; sucrose, 1.81; invert sugar, 2.70; starch, 5.46; fiber, 1.36.

47147. COLOCASIA sp. Araceæ. Taro.

Found growing, without mark of identification, in the autumn of 1912 at the Plant Introduction Field Station, Brooksville, Fla. Possibly from Java. Numbered for convenience in distribution.

"This taro resembles the Trinidad dasheen in its habit of developing oval cormels, or lateral tubers, but differs materially from it in several important respects: (1) It is a better keeper; (2) the lateral tubers rarely send up leaf shoots, which makes the harvesting and cleaning of the crop easier; (3) the corms and tubers are much more moist and require a curing period of 6 or 8 weeks after harvesting before they are suitable for table use; (4) the flesh remains more nearly white when cooked; and (5) the flavor is even more mild than that of the Trinidad dasheen.

"Because of the necessity for a curing period, this taro is to be considered as one for late winter and spring use only. Since it is less dry and firm than the Trinidad dasheen, and has less tendency to darken after cooking, it is believed that in its proper season this variety will prove very popular on the market. The lateral tubers are much better baked than boiled." (*R. A. Young*.)

47148. LACTUCA SATIVA L. Cichoriaceæ.**Lettuce.**

From Khartum, North Africa. Presented by Mr. R. E. Massey, Government botanist, Central Research Farm, Sudan Government. Received February 20, 1919.

"A sample of lettuce seed which may interest you." (*Massey.*)

47149 to 47153.

From Richmond, Victoria, Australia. Presented by Mr. F. H. Baker. Received February 20, 1919.

47149. ACACIA IMPLEXA Benth. Mimosaceæ.

A tall Australian tree, 50 feet high, with light-green, sickle-shaped, lanceolate leaves 4 to 7 inches long, cream-colored flowers in short racemes, and light-brown pods 4 to 5 inches long, curved like an interrogation mark. The dark-brown, hard, close-grained wood is much used for turnery and for all purposes which call for tenacity and strength. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 186*, and from *Maiden, Useful Native Plants of Australia, p. 357*.)

For previous introduction, see S. P. I. No. 44321.

47150. CALLISTEMON RIGIDUS R. Br. Myrtaceæ.

"Bottle-brush plant; grows to a height of 4 to 6 feet." (*Baker.*)

A low shrub with linear, rigid leaves 2 to 5 inches long. The flowers are borne in dense spikes and the protruding stamens have brilliant crimson filaments an inch long, tipped with darker colored anthers. (Adapted from *Bentham, Flora Australiensis, vol. 3, p. 121*.)

47151. CALLITRIS CUPRESSIFORMIS Vent. Pinaceæ.

"Grows in sand ridges where there is a small rainfall. It is a fine tree." (*Baker.*)

"This pine is described by Col. W. V. Legge in a report on 'The Tasmanian Cypress Pine,' published [in 1911]. According to this paper, the tree is confined mainly to the coast, where it does well on poor soils. It seems to have a slow growth, but in time reaches a height of 100 feet and a diameter of about 2½ feet. In spite of the fact that it is chiefly a warm-climate tree, it also thrives in some of the colder parts of Tasmania where there is considerable frost. It has a plain whitish wood, without figure, and with little difference in color between the sapwood and the heartwood. Its grain is hard and close, and the wood is exceedingly durable. It is largely used for piles, telegraph poles, and in general construction work. It not infrequently grows in mixture with eucalypts, and when grown in the forest under moderate light conditions its form is that of a sharp cone which is tall in proportion both to the diameter and to the spread of the lateral branches. There are all gradations from this form to the spreading, bushy tree found in the open.

"Since Florida is apparently the region in the United States best adapted to this species, I would advise growing some at Miami for experimental planting in the Florida National Forest. Although the tree is widely used for a great variety of purposes in Tasmania, I doubt if it would prove superior to our own conifers and believe that the chief advantage in introducing it into Florida would probably be to furnish a comparatively soft, light wood for local use." (*Raphael Zon.*)

47149 to 47153—Continued.

Received as *Callitris rhomboidea*, for which we are now using the name given above.

For previous introduction, see S. P. I. No. 32071.

47152. INDIGOFERA AUSTRALIS Willd. Fabaceæ.

"Native indigo plant, a beautiful shrub, with violet flowers." (*Baker.*)

An erect-branching shrub 2 to 4 feet high, with pinnately compound leaves. The 9 to 11 leaflets, about three-fourths of an inch long, vary from nearly linear to almost orbicular, and the showy red flowers are borne in dense racemes. (Adapted from *Bentham, Flora Australiensis*, vol. 2, p. 199.)

47153. STERCULIA DIVERSIFOLIA Don. Sterculiaceæ.

"*Kurrajong.*"

Found in Victoria, New South Wales, and Queensland. Useful as human food, as a forage crop, and as a fiber plant. The taproots of young trees and the young roots of old trees are used as food by the aborigines; when boiled they have a flavor similar to that of turnips, but sweeter. The seeds of this and other species are edible, and make a good beverage. Cattle and sheep are fond of the leaves and branches and in some dry seasons have existed for long periods on scarcely anything else. In parts of the Riverina (New South Wales) the trees are cut down as required for this purpose. A strong fiber is obtained from the bark; it is used by the aboriginals for making fishing nets, in both eastern and western Australia. (Adapted from *Maiden, Useful Native Plants of Australia*, pp. 59, 140, and 633.)

Received as *Brachychiton populneum*, which is now referred to the species named above.

47154. DACRYDIUM CUPRESSINUM Soland. Taxaceæ. Rimu.

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received February 25, 1919.

"This 'pine' is one of the most beautiful objects in the New Zealand bush. Its pale-green, drooping branches differ from those of any other forest tree. The leaves are only small prickles, running up a long stem from which branch other small stems whose united weight causes the main stem to hang like the branches of the weeping willow. The whole tree, when young, has the appearance of a lycopodium. The fruit is tiny, but beautiful, the nut being blue-black and the cup red. The timber is of a red or yellow color and beautifully marked. It is used to great advantage in dadoes, panels, and for ceilings. The Taranaki rimu is especially straight in the grain and very resinous. It is much used for bridge building in that district." (*Laing and Blackwell, Plants of New Zealand*, p. 74.)

For previous introduction, see S. P. I. No. 46575.

47155 to 47160.

From Japan. Presented by the Arnold Arboretum, Jamaica Plain, Mass. Numbered February, 1919.

47155 to 47160—Continued.

47155. *PYRUS FAURIEI* C. Schneid. Malaceæ. Pear.
Wilson No. 11256.

An apparently thorny shrub with small leaves $2\frac{1}{2}$ to 3 centimeters long, smooth above and sparingly pubescent beneath, smooth young fruits about 4 millimeters through, and with the calyx fugacious. This species is very striking, because of its extremely small leaves, flowers, and fruit. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde vol. 1, p. 666.*)

47156. *PYRUS* sp. Malaceæ. Pear.
Wilson No. 11254. From Chosen (Korea).

47157. *PYRUS* sp. Malaceæ. Pear.
Wilson No. 11258.

47158. *PYRUS* sp. Malaceæ. Pear.
Wilson No. 11260.

- 47159 and 47160. *PYRUS USSURIENSIS* Maxim. Malaceæ. Pear.
47159. Long peduncled. Wilson No. 11262.

"In our work the wild *Pyrus ussuriensis* has shown greater resistance to pear-blight than any other species, and since this species also endures more cold than any other, it should prove of great value in breeding work." (*F. C. Reimer.*)

47160. Short peduncled. Wilson No. 11261. From Manchuria. See preceding number.

47161. *ROSA LAXA* Retz. Rosaceæ. Rose.
From Jamaica Plain, Mass. Plants presented by the Arnold Arboretum. Numbered February, 1919.

This rose, which is found from Turkestan to Songaria and Altai, is an upright shrub with paired hooked thorns. The leaflets are small and light green, and the flowers are small and white. The small fruits are oval oblong. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2998.*)

47162. *MELINIS MINUTIFLORA* Beauv. Poaceæ. Molasses grass.
From Lavras, Minas Geraes, Brazil. Presented by Mr. Benjamin H. Hunnicutt, Director da Escola de Lavras. Received February 26, 1919.

"*Capim gordura roxa*, as this grass is called, literally means 'greasy purple grass.' I have seen *Capim gordura roxa* live down the wild fern that is such a plague in some districts and form a dense carpet between 3 and 4 feet thick upon which it was almost possible to walk. When riding or walking through it in the pasture under normal conditions one finds that the proportion of wax and grease on the blades is sufficient to thoroughly clean and polish his boots; this is no exaggeration, but is often remarked. The grass is not watery, but is unusually palatable to cattle and horses. The wax or grease, according to one analysis, totals as much as 3.22 per cent of the dry digestible matter. It is sensible to the fingers, which it makes quite sticky. I have not met it in any other country, and I believe that it is indigenous to the central part of Brazil, not thriving in the south nor in the sandier coast States of the north. It is fairly drought resistant, and comes up fairly well again after a fire. There is a related variety called *Capim gordura branco* of a bright

emerald-green color, but without the resistance of *roxa*. I have found both of the above grasses growing up to 2,000 meters on Caparao, one of the highest mountains of Brazil, and at 1,000 meters living down the wild fern; both these altitudes are subject to frost; I have also ridden through them on the uplands of Minas Geraes when they were coated with a dense white frost." (R. T. Day.)

For previous introduction, see S. P. I. No. 41148.

An illustration of a field of molasses grass is shown in Plate III.

47163. CICER ARIETINUM L. Fabaceæ. Chick-pea.

From Mexico. Presented by Mr. S. W. Augenstein, steward, Cosmos Club, Washington, D. C. Received February 27, 1919.

"A large-seeded variety grown in Mexico." (Augenstein.)

47164. PAULOWNIA FORTUNEI (Seem.) Hemsl. Scrophulariaceæ.

From Japan. Presented by the Arnold Arboretum, Jamaica Plain, Mass. Received February 21 and 28, 1919.

(Wilson No. 11181.)

A magnificent tree, 30 to 60 feet high, much resembling the well-known *Paulownia imperialis* but having slightly shorter panicles of larger lilac or purple-tinted flowers dotted with purple on the inside of the corolla. A native of central Formosa. (Adapted from T. Ito, *Icones Plantarum Japonicarum*, vol. 1, No. 3, p. 5, pl. 9.)

Received as *Paulownia mikado*, for which we are now using the name given above.

47165. PSYCHOTRIA UNDATA Jacq. Rubiaceæ.

From Littleriver, Fla. Presented by Dr. V. K. Chesnut, Bureau of Chemistry, United States Department of Agriculture. Received February 28, 1919.

"Collected the last half of October, 1918, at Littleriver, Fla., by Prof. Charles T. Simpson." (Chesnut.)

For experimentation with other nitrogen-gathering rubiaceous plants at the Miami Plant Introduction Field Station, Miami, Fla. For a discussion of nitrogen-gathering bacteria in Rubiaceæ see note under *Pavetta zimmermanniana*, S. P. I. No. 45554.

47166 to 47172. SACCHARUM OFFICINARUM L. Poaceæ.

Sugar cane.

From Santiago de las Vegas, Cuba. Presented by Dr. Mario Calvino, director, Estacion Experimental Agronomica. Received February 28, 1919.

"The following seeds came from Cuba." (Calvino.)

47166. Cuba 903.

47167. Cuba 904.

"The following seeds were sent to us from Barbados." (Calvino.)

47168. Ba. 6032.

47171. Ba. 7924.

47169. B. 6308.

47172. B. H. 10 (12).

47170. B. 7169.

47173 to 47184. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Santiago de las Vegas Cuba. Presented by Dr. Mario Calvino director, Estacion Experimental Agronomica, through Dr. P. A. Yoder, of the Bureau of Plant Industry. Received March 4, 1919.

- | | |
|-----------------------|-----------------------------|
| 47173. <i>C. 903.</i> | 47179. <i>C. 917.</i> |
| 47174. <i>C. 904.</i> | 47180. <i>C. 4.</i> |
| 47175. <i>C. 905.</i> | 47181. <i>C. 8.</i> |
| 47176. <i>C. 907.</i> | 47182. <i>C. 9.</i> |
| 47177. <i>C. 908.</i> | 47183. <i>C. 21.</i> |
| 47178. <i>C. 912.</i> | 47184. <i>903 de gorro.</i> |

47185 to 47193.

From Blackwood, South Australia. Presented by Mr. Edwin Ashby. Received March 4, 1919. Quoted notes by Mr. Ashby.

47185. BOSSIAEA sp. Fabaceæ.

"An upright-growing leafless shrub, with flattened ribbonlike stems and pea-shaped flowers all up the stem. Collected in the quarantine station at Sydney."

47186 and 47187. CHORIZEMA ILICIFOLIUM Labill. Fabaceæ.

47186. "A pretty shrub from Western Australia, about 3 to 4 feet high, with brilliant orange-red pea-shaped flowers. It blooms for many months in winter and spring."

47187. "Similar to the preceding number—with bright red and orange flowers. It blooms in the spring, but not over so long a period as the preceding number."

Received as *Chorizema grandiflora*, for which name a place of publication has not been found. It is apparently a large-flowered form of *C. ilicifolium*.

47188. ERICA HOLOSERICEA Salisb. Ericaceæ.

(*E. andromedaeiflora* Andr.)

"This is a handsome and distinct species."

47189. GREVILLEA LAVANDULACEA Schlecht. Proteaceæ.

"This is a charming, shrubby plant which grows in sandy soil, about 1 foot high and from 1½ to 2 feet broad; it flowers very freely. This variety is better than the Victorian."

47190. HIBISCUS HUEGELII WRAYAE (Lindl.) Benth. Malvaceæ.

"From the Gawler Ranges, South Australia. A tall shrub bearing large mauve-colored flowers. This is the handsomest of all the Australian 'desert roses.'"

47191. KENNEDYA COMPTONIANA (Andrews) Link. Fabaceæ.

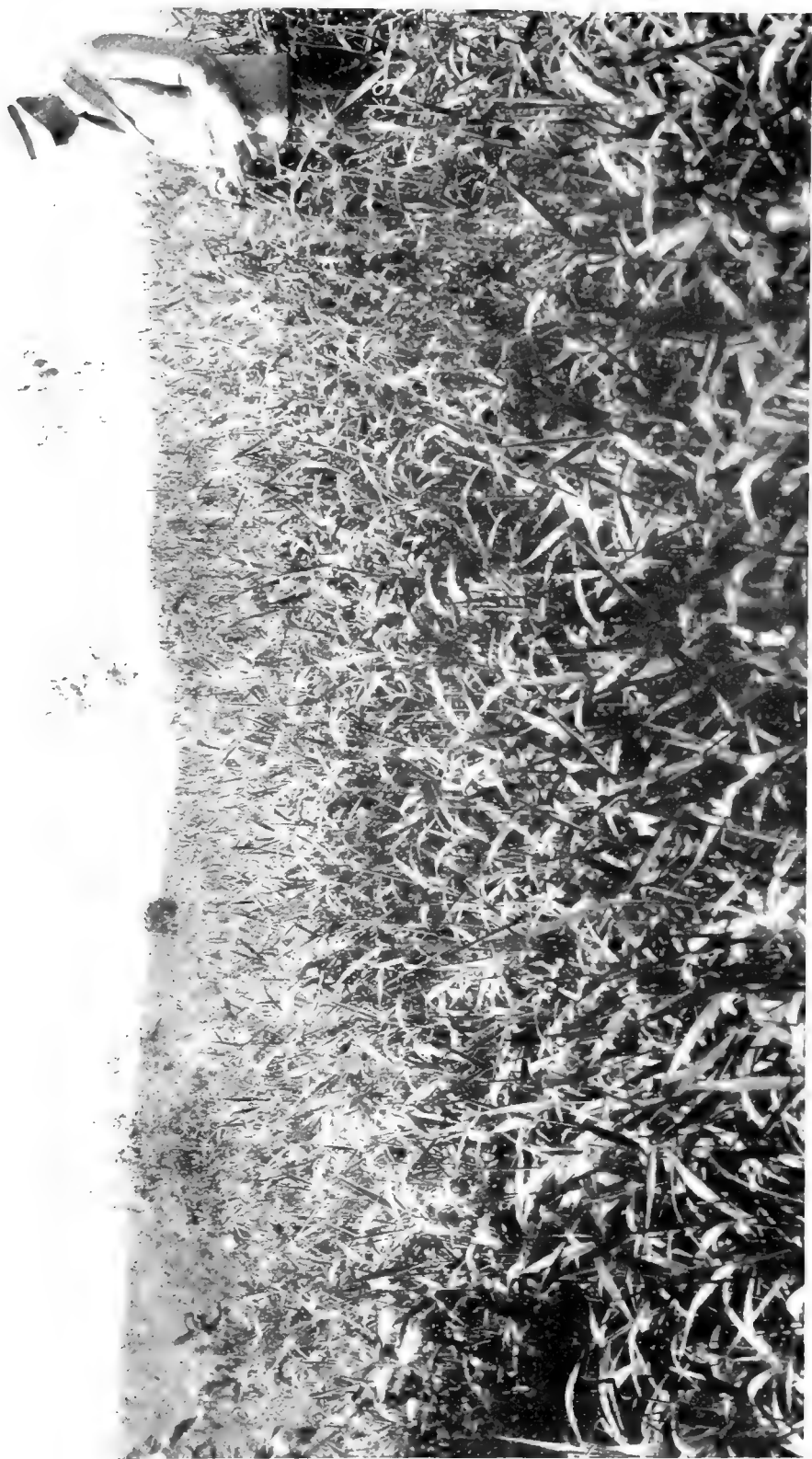
(*Hardenbergia comptoniana* Benth.)

"This is a fine climber. The sprays of flowers are very long and deep violet, and the leaves are more deeply cut than in the variety around Perth, Western Australia."

47192. OLEARIA TERETIFOLIA (Sond.) F. Muell. Asteraceæ.

(*Aster teretifolius* F. Muell.)

"A bright-green almost broomlike shrub, native of Kangaroo Island, this State. It grows to 5 feet in height and is covered with masses of



A FIELD OF MOLASSES GRASS IN BRAZIL. (MELINIS MINUTIFLORA BEAUV., S. P. I. No. 47162.)

This is the most important native pasture grass in Brazil, where it is known as *Capim melhado* and *Capim gorduro*; it is also native to parts of Africa. Although it is naturally abundant as a wild plant in Brazil, it is also cultivated extensively and is considered a very valuable forage, especially for fattening stock. The grass grows to a height of 3 to 4 feet and is very leafy; the blades have a strong molasses-like odor and are very sticky. Molasses grass was first introduced into the United States in 1899. It is well adapted to Florida and Gulf Coast conditions and will survive cold well below the freezing point, though the herbage becomes blackened. For the southern half of Florida it has shown considerable value as a pasture grass and at present is being planted rather extensively. Cattle must first acquire a taste for this grass before they will eat it readily. At Chico, Calif., it grew well, but did not withstand the winter. It may prove valuable in southern California. (Photographed by P. H. Dorsett, Laxras, Minas Gerais, Brazil, January 20, 1914; P465FS.)



A NEW RELATIVE OF THE CHAYOTE, THE TACACO OF COSTA RICA. (POLAKOWSKIA TACACO PITTIER, S. P. I. NO. 47329.)

A popular vegetable among the Costa Ricans, the tacaco, which is closely allied to the chayote (the mirliton of the New Orleans Creoles) has never been tried in the United States. It comes highly recommended as a delicious and palatable dish when prepared for the table by boiling or baking and can probably be used in as many diverse forms as the chayote itself. (Photographed by Wilson Popenoe, San Jose, Costa Rica, June 17, 1920; P17951FS.)

47185 to 47193—Continued.

small white flowers which give the bush when in flower a snowlike appearance. It stands clipping well and should make a good dwarf border hedge."

47193. TEMPLETONIA sp. Fabaceæ.

"A shrub which produces large pinkish flowers in winter; from Cottesloe Beach, Western Australia. It grows well in sand."

47194 to 47197.

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received March 7, 1919. Quoted notes by Wilson Popenoe.

47194 and 47195. LANSIUM DOMESTICUM Jack. Meliaceæ. **Langsat.**

47194. "This, like the mangosteen, is a delicious oriental fruit not yet well established in America. While it is not so famous as the mangosteen, it is highly esteemed throughout the Malayan region and is praised by many travelers. Judging from our limited experience with it, the langsat is slightly hardier than the mangosteen, and there seems to be no reason why it should not succeed with us. A few plants have been grown in the West Indies and other parts of the American Tropics, but I have yet to hear of its fruiting outside the Orient. The langsat has two allies in America; one is the well-known umbrella tree (*Melia azedarach*) naturalized in the Southern States; the other is the tropical mahogany (*Swietenia mahagoni*). The genus *Lansium*, to which the langsat belongs, is a small one; and this species is the only one cultivated for its fruit.

"The tree is rather slender in habit, with a straight trunk and compound leaves composed of three or more pairs of elliptic to obovate leaflets 3 or 4 inches in length. The fruits, which ripen in the Straits Settlements from July to September, are produced in small clusters; in general appearance they suggest large loquats, the surface being straw colored and slightly downy. The skin is thick and leathery and does not adhere to the white, translucent flesh, which separates into five segments. The flavor is highly aromatic, at times slightly pungent. Each segment of the flesh normally contains an oval seed, but some of the segments in each fruit are usually seedless. The fruit is commonly eaten while fresh, but it is said also to be utilized in various other ways.

"The name *lanzon* is applied to this fruit in the Philippine Islands, but *langsat*, or *lanseh*, is the form used in the Malay Peninsula."

47195. "*Duku*, or *dockoc*. The duku, a fruit closely resembling the langsat, is commonly considered a botanical variety of *Lansium domesticum*."

47196 and 47197. NEPHELIUM LAPPACEUM L. Sapindaceæ. **Rambutan.**

"The rambutan is one of the commonest and at the same time most palatable fruits of the Malay Peninsula. Trees are to be seen in almost every garden in Singapore and Penang, and in its season the fruit is hawked everywhere in the streets.

"The tree grows to a height of about 40 feet and when in fruit is a handsome sight, the terminal clusters of bright crimson fruits being pro-

47194 to 47197—Continued.

duced on every branch. The compound leaves are made up of oblong-ovate leaflets, about 4 inches in length and $1\frac{1}{2}$ inches wide. In habit of growth the tree appears to be normally rather round topped and spreading, but as it is frequently planted among numerous other trees it is forced to grow tall and slender, branching only at a considerable height above the ground.

"According to J. D'Almeida Pereira, of Singapore, there are 8 or 10 varieties of the rambutan, the difference being in form and coloring. The natives, however, do not distinguish between any of these varieties. Among the varieties of the true rambutan the differences do not seem to be very well marked or of great importance.

"In appearance a cluster of rambutans, when highly colored, is exceptionally attractive. The best forms attain, when fully ripe, a rich crimson color, while the poorer ones are greenish or yellowish, sometimes a combination of these two and lacking any tinge of crimson. The individual fruits are slightly smaller than a hen's egg, but more elongated in form; they are covered with soft spines about half an inch in length, and are borne in clusters of rarely more than 10 or 12. The pericarp is not thick or tough, and to eat the fruit the basal end is usually torn off, exposing the aril. The flavor is mildly subacid and somewhat vinous. An oblong flattened seed is inclosed by the aril.

"A description of the rambutan, taking as a type one of the best forms, is as follows: General form oblong elliptical; weight averaging about 1 ounce; dimension, length $1\frac{1}{8}$ inches, breadth $1\frac{1}{8}$ inches; base rounded or slightly tapering; stem slender, short; peduncle 8 to 10 inches long, woody, medium stout, bearing 3 to 10 fruits; surface covered with slender, soft fleshy spines under half an inch in length; color when ripe, crimson or crimson maroon, yellowish when not fully ripe; pericarp one-sixteenth to one-eighth of an inch thick, firm, greenish, aril whitish, transparent, about one-fourth of an inch thick, meaty, very juicy, flavor subacid, vinous, pleasant; seeds one, large, oblong, compressed, pointed at the apex, the aril adhering to it closely. For inferior varieties about the only change to be made would be in the size and coloring of the fruit."

47196. *Pamboetan si kouto*. 47197. *Atjeh lebak boelaes*.

47198. *ABIES MARIESII KAWAKAMII* Hayata. Pinaceæ. **Fir.**

From Formosa. Presented by the Arnold Arboretum, Jamaica Plain, Mass.
Received February 21, 1919.

This differs from the type in having longer cylindrical cones and black seeds. *Abies mariesii* is a tree 40 to 50 (occasionally 80) feet high, of compact, pyramidal form; the young shoots are very densely covered with red-brown down which persists several years. The leaves, one-third to an inch long and one-twelfth of an inch wide, are dark shining green and deeply grooved above, glaucous beneath with two broad bands of stomata. The lower ranks spread horizontally, while the upper shorter ones point forward and completely hide the shoot. The egg-shaped cones, 3 to 4 inches long and about 2 inches wide, are purple when young. It is one of the rarest of the silver firs. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 123.)

47199. PICEA MORRISONICOLA Hayata. Pinaceæ. Spruce.

From Formosa. Presented by the Arnold Arboretum, Jamaica Plain, Mass.

Received February 28, 1919.

A spruce with smooth branches, linear leaves 6 to 16 millimeters long, and oblong-cylindrical cones about 6 centimeters long. It grows on the slopes of Mount Morrison, Formosa, at an altitude of 9,500 feet. (Adapted from *Journal of the College of Science, Tokyo*, vol. 25, art. 19, p. 220.)

47200 to 47202.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received February 25, 1919. Quoted notes by Mr. Wester.

47200. IPOMOEA sp. Convolvulaceæ Morning-glory.

"A white-flowered Ipomoea which should prove an addition to the ornamental flora of Florida and Porto Rico."

47201. MERREMIA sp. Convolvulaceæ.

"A purple-flowered Merremia which should prove an addition to the ornamental flora of Florida and Porto Rico." •

47202. ZEA MAYS L. Poaceæ. Corn.

"A corn variety, discovered on a recent visit to Kudurangan, Cotabato, Mindanao, that matures 72 days from planting, and so may be of value to your corn breeders. This corn has been grown for many years (no one knows how many) by one of the wild tribes in Cotabato."

47203. LYCOPERSICON ESCULENTUM Miller. Solanaceæ. Tomato.

From Ottawa, Canada. Presented by Mr. W. T. Macoun, Dominion horticulturist, Central Experiment Farm. Received March 5, 1919.

"Tomato 1919, Alacrity A." (*Macoun.*)

47204 to 47212.

From Los Banos, Philippine Islands. Collected by Mr. Nemesio Catalan and presented by Dr. E. B. Copeland, of the college farm. Received March 6, 1919. Quoted notes by Mr. Catalan.

47204. ANTIDESMA BUNIUS (L.) Spreng. Euphorbiaceæ.

"*Bignay*. Collected from the college farm."

47205. CANARIUM LUZONICUM (Blume) A. Gray. Balsameaceæ.

"This tree is a source of the 'brea blanca' of commerce. The stone of the fruit (seed) contains an oily endosperm which is very good to eat. The plant is found in the forest at lower altitudes. Collected from Mount Maquiling."

47206. CORDIA BLANCOI Vidal. Boraginaceæ.

"*Anonang*. Collected from the college farm."

47207. ERYTHRINA VARIEGATA Stickm. Fabaceæ.

(*E. indica* Lam.)

"*Dapdap*. A tree with brilliant red flowers which form a very showy inflorescence. Collected on the college farm."

47208. KOORDERSIODENDRON PINNATUM (Blanco) Merr. Anacardiaceæ.
(*K. celebicum* Engl.)

47204 to 47212—Continued.

"*Amuguis*. A tree attaining a medium to large size, growing in the forest at lower altitudes. The wood falls under the third grade, according to Philippine classification. Collected at Mount Maquiling."

47209. *ORMOSIA CALAVENSIS* Azaola. Fabaceæ.

"*Bahai*. The seed is claimed to be of medicinal value for certain cases of stomach ache. The tree is found at lower altitudes in the forest. Collected from a tree on the college farm."

47210. *PAHUDIA RHOMBOIDEA* (Blanco) Prain. Cæsalpiniaceæ.
(*Afzelia rhomboidea* Vidal.)

"*Tindalo*. A tree that usually is found in somewhat open situations at low altitudes. The wood is very durable and beautifully colored; it is one of the best Philippine woods and is used for finer constructions. Collected from Mount Maquiling."

47211. *PREMNA CUMINGIANA* Schauer. Verbenaceæ.

"*Maguilic*. Collected from the college farm."

47212. *QUERCUS BENNETTII* Miquel. Fagaceæ.

Oak.

• "*Panguan*. Collected on Mount Maquiling at an altitude of about 1,000 feet."

47213. *CORDEAUXIA EDULIS* Hemsl. Cæsalpiniaceæ. **Yeheb nut.**

From Aden, Arabia. Presented by Mr. A. G. Watson, American vice consul.
Received March 1, 1919.

The yeheb nut is the fruit of a bush or small tree found in the Somaliland Desert in Africa. The compound leaves comprise 6 to 8 ovate-oblong, coriaceous leaflets about 1 inch long. On the under surface of the leaflets are peltate glandular hairs, which yield a red secretion that stains the hand when one bruises the foliage. The small flowers are borne in terminal corymbs and are followed by the coriaceous, 1-seeded pods. The ovoid seeds, which are 1 to 2 inches long, are greatly valued by the natives for food. The seeds are stewed in water and are preferred by the poorer classes to their usual diet of dates and rice. (Adapted from *Kew Bulletin of Miscellaneous Information*, 1908, p. 36.)

The following analysis of the kernels gives a good idea of the food value of these nuts: "Moisture, 9.3 per cent; ash, 3.1 per cent; reducing sugar, 2.3 per cent; cane sugar, 21.6 per cent; carbohydrates (other than sugars), by difference, 37.1 per cent; albuminoid proteids, 11.8 per cent; amid proteids, 1.3 per cent; fiber, 2.7 per cent; oil, 10.8 per cent. Nutrient ratio, 1:6.5; nutrient value, 92.

"The nuts were tested for alkaloids and glucosids, but no indication of the presence of such constituents was obtained.

"The results of the analysis indicate that the nuts are likely to prove a useful foodstuff. A satisfactory point is the presence of considerable quantities of sugars and oil.

"Judging from the analytical figures alone, the nutrient ratio, i. e., the ratio of albuminoids to carbohydrates and oil converted into their starch equivalents, is a very serviceable one, and the total 'nutrient value' is high. The kernels are rather tough, and this point raises some doubt as to the complete digestibility of the carbohydrates other than sugars.

"In preparing the nuts for use as food it is desirable that they should be soaked in just such a quantity of water as they can absorb, since if more be used there is danger of the loss of the sugars, which would diffuse into the excess of water." (*Kew Bulletin of Miscellaneous Information*, 1908, p. 43.)

47214 to 47220.

From Southern Nigeria, Africa. Presented by Mr. A. H. Kirby, assistant director of agriculture at Ibadan. Received March 6, 1919.

47214. *ANNONA SENEGALENSIS* Pers. Annonaceæ.

"Abo. No European production in any way represents the *Annona senegalensis* with its large, blue-green leaf and its small fruit. The fruit contains an aromatic, dark-red pulp, and in a modest degree displays something of that captivating quality which has exalted its kindred plant, the cherimoya of Peru, to its high repute as the queen of fruits. It must be owned, however, that it is difficult to obtain a well-developed example of this fruit, for so keenly is it spied out and devoured by the birds that often for months together it may be sought in vain." (Dr. George Schweinfurth, *The Heart of Africa*, p. 222.)

For previous introduction, see S. P. I. No. 46630.

47215. *CRACCA VOGELII* (Hook. f.) Kuntze. Fabaceæ.
(*Tephrosia vogelii* Hook. f.)

"Kassa," "Igun," etc. For vernacular names, see the work by Holland cited below.

"Used for stupefying fish . . . throughout tropical Africa. The methods adopted are much the same everywhere. The leaves and branches are pounded and thrown on the surface of the water, causing the fish to rise to the surface stupefied or dead a few minutes afterwards. They [the fish] are quite wholesome and fit for food.

"The following passage [extract from Report on Gongga Country by Inspector Armitage] gives an account of the use of 'kassa' in the Gongga Country: 'A stretch of about half a mile of water is dammed and any alligators in it killed; the people from the neighboring villages assemble, each bringing a bundle of kassa leaves which are beaten to a pulp, taken to the prepared stretch of water, and thrown in. Men then enter the water and splash about, and in about 10 minutes fish begin to appear on the surface and are collected in baskets or by hand. The largest fish are taken in this way. The skin of the men who enter the water into which the kassa has been thrown is affected by the latter and becomes rough, or, as they say, like a stick.'" (Holland, *Useful Plants of Nigeria*, pt. 2, p. 196.)

47216. *SPATHODEA CAMPANULATA* Beauv. Bignoniaceæ.
"Oruru."

A strikingly handsome tree, 20 to 70 or more feet high, with smooth white stem without branches for a considerable height from the ground and a luxuriant conical head of foliage, all studded with large flowers of a bright orange scarlet. One of the most beautiful trees in Angola, flowering from September to the end of May and fruiting in June and July. Suitable for avenue or as a shade tree. Grown from seed which is winged, light, and freely distributed by the wind. (Adapted from Holland, *Useful Plants of Nigeria*, pt. 3, p. 509.)

47217. *STROPHANTHUS GRATIS* (Wall. and Hook.) Baill. Apocynaceæ.

A handsome flowering plant; it may be propagated by seeds which are distinguished from the *Strophanthus* seeds of commerce (S. .

47214 to 47220—Continued.

kombe Oliv.) by being glabrous. The seeds of this species are recommended for use in medicine in preference to those of any other, chiefly because they yield crystalline strophanthin, whereas the established official *Strophanthus* yields this glucosid in an amorphous condition. Used for poisoning arrows. (Adapted from *Holland, Useful Plants of Nigeria, pt. 3, p. 447.*)

47218. STROPHANTHUS HISPIDUS A. DC. Apocynaceæ.

The seeds are an important drug, worth about 2 to 2½ shillings (48 to 60 cents) per pound wholesale, commonly shipped in the pods, but more often taken out, freed from the awns, and packed in bales. The seeds are poisonous, the active principle being strophanthin; used in Nigeria and generally in tropical Africa for arrow poison. It may be propagated by seed, but the commercial supply is obtained, so far, from wild plants, strong climbers making the seed difficult to collect, though, according to Dalziel, as a shrub with long lax branches it is capable of being grown in the neighborhood of towns and villages. The seed pods are available in October at Abeba, Kabba Province, where the plant is said to be plentiful. The seeds take several months to ripen. Billington reports collecting a pod in October, then not quite ripe, after noting its development for 10 months. (Adapted from *Holland, Useful Plants of Nigeria, pt. 3, p. 448.*)

47219. SYNSEPALUM DULCIFICUM (Schum.) Daniell. Sapotaceæ.

"*Agbayun.*"

This tropical African tree flowers in the months of June, July, and August, and usually produces a number of oblong or oval berries which resemble olives; they are dull green at first, but gradually change, as they ripen, into a dusky red. The seeds are inclosed in a thin, soft, slightly saccharine pulp which, when eaten, has the peculiar property of making the most sour and acidulous substances seem intensely sweet, so that citric or tartaric acids, lime juice, vinegar, and all sour immature fruits eaten thereafter taste as if they were composed solely of saccharine matter. The duration of this effect depends upon the amount of berries eaten, and the degree of maturity they have attained; when a sufficient quantity has been taken their influence is commonly perceptible throughout the day. This peculiar principle, however, is soon dissipated if the fruits are suffered to remain in a ripe condition for a length of time; preserved fruits brought to England not only lost this property but became extremely insipid. The natives of the Gold Coast often use them to render their stale and acidulated kankies [maize bread] more palatable and to give sweetness to sour palm wine and pitto [beer made from maize]. (Adapted from *Pharmaceutical Journal, vol. 11, p. 446.*)

47220. VITEX GRANDIFOLIA Guerke. Verbenaceæ.

"*Oricia.*" Near the River Nun, *Vitex grandifolia* is a small tree with the habit of an *Aralia*, growing to a height of 25 feet. In Akwapim it is a shrub, 10 feet in height, with cream-colored flowers, found at an altitude of 1,000 feet. The fruit is edible, about the size of a small plum, and is made into a kind of honey. The wood is used for making large drums. (Adapted from *Holland, Useful Plants of Nigeria, pt. 3, p. 526.*)

47221 and 47222. BAROSMA CRENULATA (L.) Hook. Rutaceæ. Buchu.

From Cape Town, South Africa. Presented by the Conservator of Forests.
Received March 8, 1919.

A small evergreen shrub, with opposite or alternate, simple, dotted, leathery leaves, in the axils of which the flowers appear. The buchu leaves of commerce are procured chiefly from *Barosma crenulata*, *B. crenata*, and *B. serratifolia*. The leaves are much used in medicine as a stimulant and tonic and appear to have a specific effect in chronic diseases of the bladder, their action probably being dependent on the powerful-smelling volatile oil which they contain. (Adapted from *Lindley, Treasury of Botany*, p. 125.)

47221. Collected at French Hoek, Cape Province.

47222. Collected at Dluitjes Kraal, Ceres, Cape Province.

47223. KOKIA DRYNARIOIDES (Seem.) Lewton. Malvaceæ.

From Honolulu, Hawaiian Islands. Presented by Mr. J. F. Rock. Received March 10, 1919.

"From Pukoo, Japulehu, Molokai." (*Rock.*)

A tree, 4 to 8 meters high, woody throughout, with membranous, nearly glabrous, cordate, five to seven lobed leaves on long petioles, and bright red flowers, of silky texture, on stout peduncles, single in the axils of the uppermost leaves. The thick, woody, ovoid capsule, about an inch in length, contains several obovoid seeds which are covered with a reddish brown tomentum. Of this exceedingly interesting species there has been only one tree in existence up to a few months ago. This same tree, which was declared dead, still showed some signs of life and produced a few capsules with mature seeds; but this is evidently the last, only a small branchlet having produced a few leaves. A few seeds of this tree have been sent to Washington to the Bureau of Plant Industry [S. P. I. No. 39354]; thus it is hoped still to perpetuate this most interesting plant. Several trees were found on the west end of Molokai, at Mahana; all are now dead, owing to ravages of cattle, sheep, and goats, which eat off the bark and leaves. (Adapted from *Rock, The Indigenous Trees of the Hawaiian Islands*, p. 307.)

"Seeds from a seedling tree given to Mr. C. C. Conradt, of Pukoo, Molokai, in 1911. The tree has flowered and fruited this season for the first time; it bore five seeds—three of which I planted here, and two I have sent to you. The original tree on Molokai [parent of Mr. Conradt's tree] is dead." (*Letter of Mr. Rock, April 14, 1919.*)

47224. BARLERIA CRISTATA L. Acanthaceæ.

From Cairo, Egypt. Seeds presented by the director, Gizeh Branch, Ministry of Agriculture. Received March 11, 1919.

A tropical shrub, with axillary, or terminal, purplish blue or rarely white flowers in dense spikes. It is sometimes used as a bedding plant. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 1, p. 454.)

47225. CARICA sp. Papayaceæ. Papaya.

From the Cauca Valley, Colombia. Presented by Mr. M. T. Dawe, San Lorenzo, Colombia. Received March 13, 1919.

"Seeds of 'papaw' collected in the Cauca Valley, January, 1919." (*Dawe.*)

"These seeds seem to belong to the same species as S. P. I. No. 41339 from Peru, and Nos. 46761 and 46945 from Colombia. They closely resemble those of *Carica candamarcensis*, but are nearly twice as large." (*H. C. Skeels.*)

47226. AMORPHOPHALLUS KONJAC Koch. Araceæ.

From Japan. Tubers collected by Mr. Walter T. Swingle, Bureau of Plant Industry, United States Department of Agriculture. Received March 13, 1919.

"Tubers of *Konyaku*. Starch from the tubers is used for food in Japan. During the war the starch prepared from this plant was exported to the United States. It is said to be used in treating airplane wings. In Japan this plant is grown under the shade of orange trees, and as it seems to be important both for food and as industrial starch, I am anxious to see what it will do in this country." (*Swingle.*)

47227. PYRUS COMMUNIS L. Malaceæ. Pear.

From Algiers, Algeria. Cuttings presented by Dr. L. Trabut. Received March 13, 1919.

"*Kontoula* pear from Achaia. Grafts of an early pear which bears abundantly a very sweet little fruit which is quite fragrant. This vigorous tree, which rapidly attains large dimensions, appears interesting to me.

"In 1914, the Botanical Station received from Greece some grafts of a pear whose fruits are much esteemed in Elis and Achaia because of their earliness; it bears the name of *Kontopodaroussa* or *Kontoula*, attains large dimensions, and is remarkable for its great and regular fruitfulness.

"Grafted upon *Pyrus gharbiana*, a species native to Algeria and Morocco, it made good growth in 1915. In June, 1918, the erect branches were covered with fruits.

"This pear is of small size, with a short peduncle, beautiful yellow, fine, sugary, fragrant flesh, not softening; it ripens in June, and is much superior to other early pears of the same date." (*Trabut.*)

47228. SILYBUM EBURNEUM Coss. and Dur. Asteraceæ.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received March 14, 1919.

"Thistle eaten when young by the natives." (*Trabut.*)

A form of blessed thistle (*Silybum marianum*), with the stems, nerves of the leaves, and bracts of the involucre an ivory white. It also differs from the typical form in having the spines on the tips of the involucral bracts very short or wanting. (Adapted from *Bulletin de la Société Botanique de France*, vol. 2, p. 366.)

47229. PHOENIX DACTYLIFERA L. Phœnicaceæ. Date palm.

From Tripoli. Presented by Dr. E. O. Fenzi, director, Stabilimento Orticolo, Tripoli. Received March 15, 1919.

"*Tabuni*. Season, end of August to middle December. The commonest kind in the oases of Tripoli; fruit small to medium sized, olive shaped, with very thin skin, pulp fiberless and more sugary than *Bayudi* [S. P. I. No. 47302]." (*Fenzi.*)

47230 and 47231.

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received March 17, 1919.

47230. *LANSIUM DOMESTICUM* Jack. Meliaceæ.

Langsat.

For previous introduction and description, see S. P. I. No. 47194.

47231. *NEPHELIUM LAPPACEUM* L. Sapindaceæ.

Rambutan.

Rambutan Atjeh Kouto.

For previous introduction and description of this species, see S. P. I. No. 47196.

47232 to 47260. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From London, England. Tubers presented by Mr. Lawrence Weaver, Commercial Secretary, Board of Agriculture and Fisheries. Received March 19, 1919.

"A collection of the principal varieties of potatoes which have been approved as immune from the wart disease." (*Weaver.*)

47232. *Abundance.*

47247. *Lochar.*

47233. *America.*

47248. *Majestic.*

47234. *Arran Comrade.*

47249. *Nithsdale.*

47235. *Arran Rose.*

47250. *Provost.*

47236. *Arran Victory.*

47251. *Rector.*

47237. *Bishop.*

47252. *St. Malo Kidney.*

47238. *Burnhouse Beauty.*

47253. *Shamrock.*

47239. *Dargill Early.*

47254. *Snowdrop.*

47240. *Edzell Blue.*

47255. *Templar.*

47241. *Golden Wonder.*

47256. *The Ally.*

47242. *Great Scot.*

47257. *The Duchess.*

47243. *Irish Queen.*

47258. *Tynwald's Perfection.*

47244. *Kerr's Pink.*

47259. *White City.*

47245. *King George.*

47260. *Witch Hill.*

47246. *Langworthy.*

47261. PYRUS CALLERYANA Decaisne. Malaceæ.

Pear.

From Nanking, China. Purchased through Mr. John H. Reisner, University of Nanking, at the request of Mr. W. T. Swingle, Bureau of Plant Industry. Received March 11, 1919.

Introduced for experiments being carried on to develop varieties of pears free from blight and also to be used for stock purposes.

47262. OXALIS CRENATA Jacq. Oxalidaceæ.

From Seekonk, Mass. Tubers presented by Mr. William B. Olney. Received March 20, 1919.

"Tubers of the edible *Oxalis crenata* blanc, the bulbs of which I obtained from France a few years ago." (*Olney.*)

47263. DIOSCOREA ALATA L. Dioscoreaceæ.**Yam.**

From Gotha, Fla. Tubers presented by Mr. Henry Nehrling. Received March 22, 1919.

"One of a mixed lot of good varieties of yams received from the Trinidad Department of Agriculture in April, 1918, and recorded under S. P. I. No. 45990. This variety was sent to Mr. Nehrling for propagation." (Young.)

47264 to 47295.

From Poitiers, France. Plants purchased from Viaud-Bruant. Received March 22, 1919.

47264 to 47272. RIBES NIGRUM L. Grossulariaceæ.**Black currant.**47264. *À fruits blancs ou gris (Cassis).*47265. *À fruits noir.*47266. *À fruits noir feuilles panachees.*47267. *Blanche de Werders.*47268. *Bang up.*47269. *Victoria.*47270. *Champion.*47271. *Merveille de la Gironde.*47272. *Royal de Naples.***47273 to 47295. RIBES VULGARE Lam. Grossulariaceæ.****Garden currant.**47273. *À fruits blancs (Grosceillers).*47274. *À fruits rouges.*47275. *Cerise à longue grappes, rouge.*47276. *Cerise Boisselot.*47277. *Ccriste Goliath, rouge.*47278. *Ccriste incomparable, rouge.*47279. *Cerise, rouge.*47280. *Comite.*47281. *De Holland, à longues grappes blanches.*47282. *De Holland, à longues grappes rouges.*47283. *Fertile d'Angers, rouge.*47284. *Grosse rouge de Boulogne.*47285. *Hâtive de Bertin rouge.*47286. *Imperial, à fruits blanches.*47287. *Kirsch, rouge.*47288. *Knight, rouge.*47289. *La Merveilleuse.*47290. *Marvin crystal blanc.*47291. *Ruby Castle, rouge.*47292. *Ruby Coster, rouge.*47293. *Sans Pepin, rouge.*47294. *Versaillaise blanche.*47295. *Versaillaise rouge.*

47296 to 47298. RUBUS STRIGOSUS × RUBRISSETUS. Rosaceæ.**Raspberry-dewberry.**

From College Station, Tex. Plants presented by Mr. H. Ness, horticulturist, Texas Agricultural Experiment Station. Received March 25, 1919.

A hybrid between *Rubus strigosus* (the Brilliant), a red raspberry, as the staminate parent, and *Rubus rubrisetus*, a dewberry, as the pistillate parent. The fruit is dark red to nearly black, and the flavor is mildly acid with a strong reminder of the raspberry—very superior to the blackberry. The drupelets adhere more to the core than in the raspberry. (Adapted from the *Journal of Heredity*, vol. 9, p. 338.)

47296. No. 1.

47298. No. 3.

47297. No. 2.

47299 and 47300. BERBERIS spp. Berberidaceæ. Barberry.

From Wisley, Ripley, Surrey, England. Plants presented by Mr. Fred J. Chittenden, director, the Royal Horticultural Society's Gardens. Received March 26, 1919.

47299. BERBERIS POLYANTHA Hemsl.

A deciduous shrub, 6 to 10 feet high, with simple or three-pronged thorns, obovate leaves, mostly rounded at the apex, and yellow flowers which are produced during June and July in drooping panicles carrying 20 to more than 50 blossoms. The fruit is red. This is a very fine species, remarkable for the large and abundant flower panicles. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 246.)

47300. BERBERIS RUBROSTILLA Hort.

"An elegant and beautiful seedling barberry of unrecorded parentage, but probably a hybrid between *Berberis wilsonae* and *B. concinna*. It has the growth of the latter, but has large pendent fruits of a rich coral-red color. A very pretty and useful addition to our fruiting shrubs." (*Gardeners' Magazine*, vol. 59, p. 449.)

47301. PYRUS USSURIENSIS Maxim. Malaceæ. Pear.

From Talent, Oreg. Cuttings presented by Prof. F. C. Reimer, director, Oregon Agricultural Experiment Substation. Received March 21, 1919.

These cuttings were taken from trees grown from S. P. I. No. 21880, collected by Mr. Meyer near Shinglungshan, Chihli, China.

"Seeds of a wild pear which grows here and there in big groves and sometimes assumes a large size, 60 to 80 feet tall, with trunks 2 to 3 feet in diameter. May be utilized as grafting stock in northern regions." (*F. N. Meyer*.)

47302 and 47303. PHOENIX DACTYLIFERA L. Phœnicaceæ.**Date palm.**

From Tripoli. Presented by Dr. E. O. Fenzi, director, Stabilimento Orticolo Libico, Tripoli. Received March 22, 1919. Quoted notes by Dr. Fenzi.

47302. "Bayudi. Ripening as early as August. Fruit large, cylindrical; pulp rather sweet but somewhat fibrous."

47303. "Bronsi. One of the latest varieties, hardly ripening before October. Fruits large to very large, of bright crimson color, turning to shining black at maturity; pulp of extra good quality."

47304 to 47308. ELAEIS GUINEENSIS Jacq. Phœnicaceæ.**Oil palm.**

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Plant-Breeding Station. Received March 24, 1919. Quoted notes by Dr. Cramer.

"The oil palms I introduced here commenced to fruit when I had not yet my own garden in Sumatra at my disposition. I have planted in several Government rubber estates, where no other oil palms are in the neighborhood, plats of 5 to 10 palms, each plat descending from one seed bearer."

47304. "Variety *Bonga*. 423 K. W."

47305. "No. 1. Variety *Nsombo* C. 424 A. IV."

47306. "No. 1. Variety *Buinde* C. 426. M. III."

47307. "No. 1. Variety *Nsombo* B. (Gellet.) 102 K. W."

47308. "No. 3. Variety *Nsombo* B. (Gellet.) 102 K. W."

47309. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. Yerba maté.

From Asuncion, Paraguay. Presented by Mr. C. F. Mead, Porto Murtinho, Matto Grosso, Brazil. Received March 28, 1919.

"This seed has been in Asuncion for two years and it may be past its germinating stage. In this case, if it will not serve, I can probably get you a supply of the yerba of Brazil, which, as far as plant and seed are concerned, is of the same class, though the same can not be said of the prepared yerba." (*Mead.*)

For previous introduction, see S. P. I. No. 46891.

47310. SOLANUM SCALARE C. Wright. Solanaceæ.

From Cairo, Egypt. Presented by Mr. F. S. Walsingham, Gizeh Branch, Ministry of Agriculture. Received March 29, 1919.

A shrubby solanum found along streams on the west coast of Africa from Sierra Leone to Pungo Andongo. The stem, the leaves, and the outside of the flowers are covered with stellate pubescence. The ovate-oblong leaves have undulate margins and the white or violet flowers, half an inch across, are borne in racemose clusters of about ten. The fruits are smooth, shining red, globose berries, about half an inch in diameter. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 4, sec. 2, p. 224.*)

47311 to 47314. DATURA spp. Solanaceæ.

From Ecuador. Collected by Dr. J. N. Rose, associate curator, U. S. National Herbarium, Washington, D. C. Numbered in March, 1919. Quoted notes by Dr. Rose.

47311. *DATURA* sp.

"(No. 23553. Seeds obtained in the American Legation at Quito.) A shrub, 10 feet high, with large orange-colored flowers. This plant is cultivated in parks at Quito and is very attractive."

47312. *DATURA* sp.

"(No. 22828. Collected at Cuenca. September, 1918.) A bush, 8 to 10 feet high, with rather small red flowers which are 5 or 6 inches long; the calyx and corolla lobes have long, acuminate tips."

47311 to 47314—Continued.**47313. DATURA sp.**

"(No. 22792. Collected at Azogues, Ecuador, altitude about 8,000 feet.) Bush, 6 to 8 feet high, covered with large, white, pendent flowers 12 inches long. It is called *Floripondio*."

47314. DATURA sp.

"(No. 22965. Collected south of Cuenca.) Flowers of a saffron-yellow; corolla lobes five, acuminate reflexed; calyx 3-lobed, green, acuminate; flowers smaller and the throat broader and the calyx lobes more attenuate than in the red-flowered species."

47315. DIALIUM DIVARICATUM Vahl. Cæsalpiniaceæ.

From Bolivar, Colombia. Fruits collected by Mr. H. M. Curran at Tierras de Loba. Numbered March, 1919.

Otu. Wood used for general construction requiring strength; bark is used for medicinal purposes. Native to northern States of Brazil. (Adapted from *Correa, Flora do Brazil*, p. 41.)

A tree with alternate, pinnately 3-foliolate leaves, the leaflets being ovate and about 2 inches long. The flowers are borne in erect terminal panicles and are followed by smooth, brown, pear-shaped fruits the size of a hazelnut. The seeds are surrounded by an edible pulp much resembling that of the tamarind, to which this tree is closely related. (Adapted from *Vahl, Enumeratio Plantarum*, vol. 1, p. 303.)

47316 and 47317. ZEA MAYS L. Poaceæ.**Corn.**

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received March 29, 1919.

"Two varieties. Corn maturing in 75 days from planting, obtained from Cotabato, which may be of value for breeders because of their earliness." (*Wester*.)

47316. "Gading."**47317. "Lamuck."****47318 and 47319.**

From San Jose, Costa Rica. Seed presented by Mr. F. Ruin. Received March 31, 1919.

47318. ANNONA CHERIMOLA Mill. Annonaceæ.**Cherimoya.**

A variety sent in without description. A subtropical tree, native to the Andes of Peru, which produces fruits of exquisite flavor.

For previous introduction and description of other forms, see S. P. I. Nos. 43485 and 45020.

47319. CYPHOMANDRA sp. Solanaceæ.**Tree-tomato.**

An undescribed species which has a "delicious fragrance, and is used for preserves."

47320. CHENOPodium AMBROSIoidES L. Chenopodiaceæ.**Wormseed.**

From Santiago, Chile. Presented by Sr. S. Izquierdo, Santa Ines Nursery. Received March 31, 1919.

A perennial herb, native to tropical South America, from which is obtained a very active anthelmintic frequently employed as a remedy for lumbricoid worms.

For previous introduction and further description, see S. P. I. Nos. 46296 and 46309.

47321. TRIFOLIUM AFRICANUM GLABELLUM Harv. Fabaceæ.

Clover.

From Cedara, Natal, Union of South Africa. Presented by Mr. John Fisher, acting principal, School of Agriculture. Received March 28, 1919.

An indigenous Natal clover found growing in vleis on the Cedara farm. Roots of this plant were dug up from the vlei and transplanted into the manured soils of the variety plats. They grew very vigorously, producing a thick sward and having to be cut back to prevent their smothering other clover in adjacent plats. This type dies down in the winter; it remains green, however, up to the end of June. It springs up again with the early rains and soon produces flower heads which are not unlike red-clover blossoms but larger. The plat lasted three years and then began to deteriorate. This type should receive special study and attention, as it is certainly better suited to the local conditions than any of the others which have been tried. (Adapted from *Sawyer, Cedara Memoirs on South African Agriculture, vol. 2, p. 163.*)

47322. CEROXYLON ANDICOLA Humb. and Bonpl. Phœnicaceæ.

Wax palm.

From Bogota, Colombia. Presented by Sr. Jorge Ancizar. Received March 28, 1919.

"*Palma de cera* or *wax palm* of Colombia. Not to be confused with the carnauba wax palm of Brazil (*Copernicia cerifera*). The wax palm of Colombia is found in the high valleys of the Andes of that country at altitudes between 5,000 and 8,000 feet. The tree reaches a height of 125 feet and over, with a diameter up to 2 feet. The surface of the trunk is covered with a coating of a whitish wax, which gives it a curious marblelike appearance. As much as 25 pounds has been obtained from a single tree, and it is used by the natives for candle making. It has also been exported to Europe and, after being purified, is said to be suitable as a substitute for carnauba wax for many purposes. The leaves are feather shaped, dark green above, whitish below, and of a peculiar clothlike texture. The fruits are reddish, about the size of cherries, and appear in large bunches." (*C. B. Doyle.*)

47323. DIOSPYROS KAKI L. f. Diospyraceæ.

Kaki.

A tree growing at the Plant Introduction Field Station, Chico, Calif.; purchased in 1911 from the P. J. Berckmans Co., Augusta, Ga. Numbered for convenience in distribution.

"*Miyō tan*. This variety bears staminate blooms in the greatest profusion, but produces very few pistillate flowers, and for all practical purposes may be called a male variety. I believe it will prove an excellent tree to interplant in persimmon orchards, especially in the Southeastern States, where the investigations of Prof. H. H. Hume have shown a pollinator to be required for the setting of a good crop of fruit." (*Peter Bisset.*)

47324 to 47328.

From Los Banos, Laguna, Philippine Islands. Collected by D. W. H. Weston, College of Agriculture. Received March 31, 1919. Quoted notes by Dr. Weston.

47324. COIX LACRYMA-JOBI L. Poaceæ.

Job's-tears.

"Seed of the wild *Coix lacryma-jobi* which grows along the creek here. There is nothing unusual about it."

47325 and 47326. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ.
Ma-yuen.

"Seed of the *ma-yuen* which has been grown at the college here. The bulk seed was grown at the college for the first time from seed from Tangkulan, Bukidnon, Mindanao, where it was collected by Mr. P. J. Wester. Since the college-grown seed was over half a mile from any wild Coix, it is probably pure. It is a very interesting variety, tall, up to 7 feet, a heavy bearer, with green fruit turning a ruddy color, and finally to a grayish buff, or pale gray. Although the people here do not recognize it as different from the common hard-shelled Job's-tears and call it by the same names—tigbee and adlay—it has a soft exocarp, and is used for food in the islands of Mindanao and Palawan, and in the mountains back of Manila in Rizal Province."

47325. "Collected originally by Mr. P. J. Wester, November, 1918, Kalasungay, Bukidnon, Mindanao."

47326. "Grown at the College of Agriculture, Tangkulan, Bukidnon, Mindanao."

47327 and 47328. ZEA MAYS L. Poaceæ.

Corn.

47327. "'*Manobo sweet*.' These ears are from the original source of those we grew here, namely, the Cotabato region of Mindanao; and are consequently more pure than those grown here. It is a dwarf variety, maturing at about 3 to 4 feet, and is extremely early, requiring only about 72 days for complete maturity. The name '*Manobo sweet*' is misleading, since the Manobos are a wild tribe of that island and probably do not cultivate this maize particularly; and, furthermore, it is by no means a sweet type."

47328. "*Cotabato*." A corn of similar appearance to the "*Manobo*," but with white kernels rather than yellow. No notes other than the name under which it came are available concerning this variety.

47329. POLAKOWSKIA TACACO Pittier. Cucurbitaceæ. **Tacaco.**

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé. Received December 10, 1918. Numbered March, 1919.

"The tacaco has a hard skin when ripe, and keeps in perfect condition for weeks before it shrivels. The fruits preferred for planting are those which fall off the vine when dead ripe, but fruits shriveled from long keeping will also grow. If planted in the soil, they do not sprout; it is best to bury them in rotting leaves, but they will grow if placed on the ground with a layer of leaves over them." (Wercklé.)

For previous introduction, see S. P. I. No. 41141.

For an illustration of this fruit, with the flowers, see Plate IV.

**47330 to 47348. CASTANEA DENTATA (Marsh.) Borkh. Fagaceæ.
Chestnut.**

From New York. Scions collected by Dr. Walter Van Fleet. Received March 29, 1919.

"The material consists of grafting wood collected from trees that show evidence of resistance to infections of *Endothia parasitica* which has existed for nearly 20 years and has nearly destroyed all of the very abundant stands of chestnuts about the city of New York except three scattered groups. These were discovered during the past summer by Dr. A. H. Graves, New Haven, Conn., and the trees were numbered by him from 1 to 142. These groups are so disposed that it is conceivable that they may each be descended from a naturally resistant ancestor in each locality. Numbers 1 to 48 are situated in Innwood and Van Cortlandt Parks, at the north end of Manhattan Island, Nos. 49 to 76 near Hollis, Long Island, and Nos. 77 to 153 near Valley Stream, Long Island, all within a few miles of New York City. Material was collected only from the most promising trees in each locality." (*Van Fleet.*)

47330. No. 46. From Van Cortlandt Park, Manhattan Island.

From Hollis, Long Island:

47331. No. 57.

47335. No. 73.

47332. No. 58.

47336. No. 75.

47333. No. 60.

47337. No. 78.

47334. No. 68.

47338. No. 86.

47339. Precocious tree. From Hollis, Long Island.

From Valley Stream, Long Island:

47340. No. 90.

47345. No. 107.

47341. No. 93.

47346. No. 111.

47342. No. 96.

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47348. No. 137.

47344. No. 106.

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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

INVENTORY
OF
SEEDS AND PLANTS IMPORTED
BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM APRIL 1
TO JUNE 30, 1919.

(No. 59; Nos. 47349 to 47864.)



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1922.

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRO- DUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1919 (NO. 59; NOS. 47349 TO 47864).

INTRODUCTORY STATEMENT.

The peculiar character of these inventories can not be emphasized too often. They are not catalogues of plants now growing in arboreta or botanical gardens. They do not represent a reservoir of living plant material kept in stock for the experimenters of the country, for it would be quite impossible to maintain such a thing except at tremendous expense. The inventories are, however, attempts to record for future use the characteristics of a stream of plant immigrants which is pouring into America through the activities of this office. They show what the plants are botanically, where they come from, the name of the person who starts each one of them toward this country, and what the sender and, to some extent, what the printed literature has to say about each of these plants.

The agriculture of America in the next century will diverge widely from what it is to-day, just as to-day it is something vastly different from its condition when the Indians hunted over the country. Some of the beginnings of the changes that are coming will find their first record in these plant inventories. Even now it will be found that the date oases of California and Arizona, the durum-wheat areas of the Great Plains region, the feterita-sorghum areas and the Sudan grass fields of the West, the dasheen patches of the South, the Zante currant vineyards of California, the timber-bamboo groves of Louisiana, the rice fields of California and Texas, if their history is traced, had their beginnings in part or wholly in these inventories, for the first notices of the arrival on American shores of the plants which have made them possible were printed here. Many interesting new plants make their first appearance with us in this fifty-ninth inventory.

The fact that many hardy palms thrive and bear well on the high pinelands of Florida and in southern California makes the introduction of a Brazilian species of *Butia* (No. 47350) with fruits as large as plums and having a pineapple flavor a matter worthy of unusual attention by Florida and California amateurs.

Rosa gentiliana (No. 47359) was presented by Lady Harriet Thiselton-Dyer, from her Gloucester home in England, in April, 1919. Dr. Van Fleet, who has a bush of this species at Bell, Md., predicts that it will have a great future in the Southern States, and he has urged its wide distribution there.

The Guatemala grass (*Tripsacum laxum*, No. 47396), first introduced by Mr. G. N. Collins, has made a satisfactory growth in southern Florida and seems promising as a forage grass there.

A variety of bush Lima bean (No. 47447), selected since 1876 by Mr. Harkness at Iroquois, Ontario, and now adapted to cultivation in regions with a season too short for the ordinary strains of this vegetable, is presented to American growers.

The success of certain African species of trees in southern Florida makes worthy of special mention the arrival of a collection (Nos. 47496 to 47503) which includes: A new species of *Erythrina* (*E. excelsa*, No. 47498), with gorgeous scarlet flowers; a fragrant-flowered tree related to the *Annona* (*Monodora myristica*, No. 47500), with flowers 6 inches across; an ornamental leguminous tree (*Pahudia africana*, No. 47501) with dense racemes of fragrant blossoms; and a new species of *Spathodea* (*S. nilotica*, No. 47502), related to *S. campanulata*, which is already a common tree around Miami.

Mr. Gossweiler has sent from Loanda, Angola, a distinctly new fruit tree (*Trichoscypha* sp., No. 47519) which bears bunches of edible peachlike fruits. The tree is native to Portuguese West Africa and may prove an acquisition to Porto Rican and Hawaiian horticulture.

The acom of Brazil (*Dioscorea latifolia*, No. 47564), a yam which bears aerial tubers suggesting by their shape a turkey's liver, is remarkable in that these tubers are excellent eating when cooked. The growing interest in this group of starchy food producers may make this new introduction which Sr. Argollo Ferrão has sent of unusual importance.

The discovery of a bush variety of *Dolichos lablab* (No. 47568) by Mr. Harland, of St. Vincent, not only may make it possible to use this excellent cover crop in the citrus orchards of Florida, since it will not climb the trees, but also may lead to a wider use of this species as a vegetable. Its beans make excellent soups and are useful in many ways.

The puka tree of New Zealand (*Meryta sinclairii*, No. 47570), which for some time was supposed to be nearly extinct in its native habitats but now is grown as an ornamental, has so interesting a history that amateurs who can grow it will be interested to read Mr. Poynton's account of its introduction into cultivation.

To an amateur who will take the trouble to breed them the *Actinidias* offer a promising field, and he will want to add *A. strigosa* (No. 47633) to his collection for breeding purposes. When one considers the vigor and beauty of these climbers and their freedom from disease, they seem worth improvement as decorative vines alone, but when the delicate character of their fruit is taken into consideration the problem of their breeding and selection becomes one of real importance.

Arundinella hispida (No. 47641) is a grass from the hilly parts of India, which is distributed pretty generally through the Tropics and which in Sao Paulo, Brazil, is considered a good forage plant for dry lands.

The *Buddleias* have proved a great addition to our garden plants and a tree species from India (*B. asiatica*, No. 47650), with sweet-scented white flowers which bloom continuously for three months, may add another perfume to the dooryards of Florida and California.

Eriobotrya petiolata (No. 47679), a relative of the loquat of Japan which occurs in Sikkim and the eastern Himalayas, may be interesting to try as a stock for the more familiar Japanese species.

Grewia multiflora (No. 47689), a tree related to the linden, the wood of which is suitable for ax handles, oars, etc., and which grows at 4,000 feet altitude in India, may be worthy of trial in the South.

A vigorous vine (*Holboellia latifolia*, No. 47693), which bears racemes of delightfully fragrant green and violet flowers and fruits 5 inches long resembling a passion fruit in flavor, is something which everyone who lives where it can be made to grow will be interested in testing.

Mr. Cave, the curator of the Lloyd Botanic Gardens in Darjiling, has sent in a remarkable collection of 230 species of Himalayan ornamental and economic plants (Nos. 47629 to 47858), among which are many that will doubtless find a permanent home in America. The Puget Sound region, if not too cool in winter, should be admirably adapted to their culture. Among the trees of interest are found Himalayan maples (*Acer* spp., Nos. 47629 to 47632); a new birch (*Betula utilis*, No. 47647); an Indian tamarisk (*Tamarix dioica*, No. 47810) which is often planted along the seacoast and which may prove of value for our own Florida coast; and two species of the genus *Terminalia* (Nos. 47855 and 47856), which may be worth trying as shade trees in Florida since *T. arjuna* has proved so successful there. There are a number of fruits of interest, including a wild olive from Sikkim (*Olea gamblei*, No. 47742), which bears fruits an inch in length; a yellow-fruited raspberry (*Rubus ellipticus*, No. 47781), said to be one of the best wild fruits of India; *Solanum verbascifolium* (No. 47800), a shrub cultivated in southern India for

its small fruits, which are eaten in curries; and a species of *Artocarpus* (*A. lakoocha*, No. 47833) related to the jack-fruit and bread-fruit trees but with small yellow acid fruits. *Manisuris striata* (No. 47847) and *Panicum patens* (No. 47848) are new forage grasses of possible value for the South. The collection contains some remarkable ornamentals: Five strains of the gorgeous *Magnolia campbellii* (Nos. 47714 to 47718), the most wonderful of all magnolias, bearing blossoms 10 inches across, ranging from white through dark red to purple; a new ornamental tree, *Luculia gratissima* (No. 47710) with magnificent round masses of pink flowers; *Microglossa albescens* (No. 47733), a tree of the composite family with corymbs of lilac flowers 8 inches in diameter; seven species of Himalayan rhododendrons (Nos. 47771 to 47777); *Pueraria phaseoloides* (No. 47850), a relative of the kudzu vine, bearing reddish instead of purple flowers (it may not have the luxuriant weedy habit of the kudzu); and one of the most beautiful of Himalayan creepers, the Porana or snow-creeper (*Porana racemosa*, No. 47761), which has already proved its adaptability to conditions in southern Florida, where it blooms in the winter time and makes a gorgeous show. There are also included a remarkable barberry (*Berberis napaulensis*, No. 47646); a Himalayan bittersweet (*Celastrus paniculatus*, No. 47657); three species of Indian Ilex (Nos. 47697 to 47699); two species of Himalayan cherry (Nos. 47766 and 47767), possibly suitable for stocks; *Toddalia asiatica* (No. 47813), one of the most valuable of Indian drug plants; and the emblic myrobalan (*Phyllanthus emblica*, No. 47751), a fruit which is used for tanning purposes and also as a pickle.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels, while the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Miss Esther A. Celander.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., October 4, 1921.

INVENTORY.¹

47349 to 47357.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received April 1, 1919.

47349. ABROMA AUGUSTA L. f. Sterculiaceæ.

A large spreading shrub, native to tropical Asia, with leaves and branches softly hairy, the leaves cordate and angled, and with purple flowers; the capsule is membranous, 5-angled and 5-winged, and the seeds are numerous. It flowers most profusely during the rains, and the seeds ripen in the cold season. The bark of the twigs yields a fiber much valued for its great beauty, softness, cheapness, and durability. It might be used with advantage as a substitute for silk. The plant yields three crops a year. The bark of the root is used medicinally. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 8.)

47350. BUTIA CAPITATA PULPOSA (Barb.-Rodr.) Becc. Phœnicaceæ.

(*Cocos pulposa* Barb.-Rodr.)

Palm.

"A hardy palm from southern Brazil, belonging to the same group as the species commonly cultivated in California as *Cocos australis*, *C. yatay*, and *C. eriospatha*. The trunk is 6 to 12 feet by 1½ to 2 feet in diameter, with rather short, abruptly arched leaves 6 to 9 feet long. The petioles are armed with stout spines. The fruit is yellow, about 1 inch long and 1¼ inches in diameter, and the pulp is of a texture and taste somewhat like the pineapple." (*C. B. Doyle*.)

For previous introduction, see S. P. I. No. 43238.

47351. CAESALPINIA SEPIARIA Roxb. Cæsalpiniaceæ.

A large, climbing, prickly bush on the Himalayas, and extending to Ceylon and Java; it ascends to 4,000 feet in altitude. Lac is gathered on the tree in Baroda. The bark is much used for tanning and the young pods contain an essential oil; in Chumba the bruised leaves are applied to burns. It makes an impenetrable hedge. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 2, p. 13.)

¹All introductions consist of seeds unless otherwise noted. It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by the Office of Foreign Seed and Plant Introduction; and further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases undoubtedly be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

47349 to 47357—Continued.**47352. CASSIA BONARIENSIS Colla. Cæsalpiniaceæ.**

A shrub from Buenos Aires, Argentina, growing about 6 feet high, with lance-shaped leaflets and ornamental clusters of yellow flowers.

For previous introduction, see S. P. I. No. 43773.

47353. CASSIA HIRSUTA L. Cæsalpiniaceæ.

An erect annual herb covered with long hairs. The compound leaves are made up of three to five pairs of ovate leaflets 2 to 3 inches long, and the yellow flowers are borne in axillary racemes. Native to Brazil. (Adapted from *Martius, Flora Brasiliensis, vol. 15, pt. 2, p. 114.*)

47354. DAHLIA MAXIMILIANA Hort. Asteraceæ.**Dahlia.**

A tall dahlia, about 7 feet high, with smooth lenticular stems, bipinnate leaves having relatively slender petioles, and lilac flowers. The plant presents a stately appearance and continues in bloom for a considerable time. Native to Mexico. (Adapted from *Gardeners' Chronicle, vol. 11, p. 216.*)

47355. ECHIMUM NERVOSUM Ait. Boraginaceæ.

A shrubby perennial with lanceolate leaves and large, ovate racemes of blue flowers. It is native to the Madeira Islands, where it flowers from June to August. (Adapted from *Aiton, Hortus Kewensis, 2d ed., vol. 1, p. 300.*)

47356. ECHIMUM WILDPRETII Pearson. Boraginaceæ.

A tall, softly hairy biennial, with a simple, erect, leafy stem, 2 to 3 feet high, terminated by a dense-flowered thyrsus of innumerable short-peduncled cymes which are very much shorter than the linear, upcurved floral leaves. The stem leaves are 6 to 8 inches long, softly hairy on both surfaces; the lower floral leaves are 3 to 4 inches long and linear. The pale-red flowers are funnel or bell shaped. Native to the Canary Islands. (Adapted from *Curtis's Botanical Magazine, pl. 7847.*)

47357. HIBISCUS MUTABILIS L. Malvaceæ.

A tall East Indian shrub, with large, broad cordate leaves and bearing large red flowers which change to white. It blooms in summer and late autumn, and is considerably planted in gardens and hedges. (Adapted from *Britton, Flora of Bermuda, p. 238.*)

47358. GARCINIA TINCTORIA (DC.) W. F. Wight. Clusiaceæ.

(*G. xanthochymus* Hook. f.)

From Cienfuegos, Cuba. Presented by Mr. Robert M. Grey, Harvard Experiment Station. Received April 1, 1919.

"The tree, which is fairly rapid in growth, has large, opposite, elliptic or oblong, coriaceous leaves 6 to 10 inches long. The orange-yellow fruits, borne singly or in clusters of 3 to 5 in the axils of the leaves on mature wood, are round or tapering to an acute apex and are often over 2 inches in diameter. They are made up of 3 to 5 segments, each usually containing a large, oblong seed. The flavor of the ripe fruit is subacid and not excellent. The green fruit, when cut or injured, exudes a quantity of yellow gum. Received several years ago under the name of *Garcinia mangostana.*" (Grey.)

47359. ROSA GENTILIANA Lev. and Van. Rosaceæ. **Rose.**

From Witcombe, Gloucester, England. Presented by Lady Harriet Thistleton-Dyer. Received April 2, 1919.

A rose which is abundant in the mountainous regions of western Hupeh and eastern Szechwan, where it forms tangled masses 6 meters or more in height. The numerous large white flowers are very fragrant, and the anthers are golden yellow. The species is easily distinguished by its glabrous, pale-gray shoots and the 3 to 5 foliolate leaves which are shining green above and very pallid beneath. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 312.)

Cuttings from the same plant were received as *Rosa cerasocarpa* Rolfe (now referred to *R. gentiliana*) and recorded under S. P. I. No. 46789.

47360. GLYCINE PRICEANA (Robinson) Britton. Fabaceæ. **Price's groundnut.**

(*Apios priceana* Robinson.)

From Hartsville, S. C. Collected by Mr. J. B. Norton, Agricultural Explorer for the Department of Agriculture, in September, 1918. Received April 2, 1919.

"Seed from plants growing on the grounds of Mr. David R. Coker, Hartsville, S. C. I collected the original tuberous roots in October, 1917, at Bowling Green, Ky. Bowling Green is the type locality and the only known region where this wonderful bean grows wild. This plant is useful both as an ornamental and as a food plant." (*Norton.*)

47361. XANTHOSOMA SAGITTAEFOLIUM (L.) Schott. Araceæ. **Yautia.**

From Port of Spain, Trinidad, British West Indies. Corms presented by Mr. Claude Connell through Mr. F. W. Urich, entomologist, Board of Agriculture. Received April 2, 1919.

"A yautia, with reddish buds, received under the name of 'nut eddo.' The flesh of the corms is yellowish when cooked, and of fair flavor." (*R. A. Young.*)

47362 and 47363.

From Peking, China. Presented by Mr. Han, assistant director, Chinese Forestry Bureau, through Hon. Paul S. Reinsch, American Minister at Peking. Received April 3, 1919. Quoted notes by Mr. Han.

47362. PISTACIA CHINENSIS Bunge. Anacardiaceæ. **Chinese pistache.**

"The pistache tree is a fairly rapid grower. Its wood is good, durable, and much valued in making household furniture and agricultural implements. Its shoots are edible. Oil is extracted from its seeds. It is found in the central parts of China, especially along the northern side of the Yangtze Valley. It is of great economic value."

For previous introduction, see S. P. I. No. 46136.

47363. STILLINGIA SEBIFERA (L.) Michx. Euphorbiaceæ. **Tallow tree.**
(*Sapium sebiferum* Roxb.)

"The tallow tree is well known for the oil it produces. Two kinds of oil are produced from the tallow tree: the waxy oil from the outside of the seed, much used in making tallow, and the liquid oil extracted from the seeds. It is found in the central parts of China, especially along the northern side of the Yangtze Valley. It is of great economic value."

For previous introduction, see S. P. I. No. 23218.

47364. Gossypium sp. Malvaceæ.**Kidney cotton.**

From Asahan, Sumatra. Collected at Kampong Poeloe, Mandi, by Prof. H. H. Bartlett, University of Michigan, Ann Arbor, Mich. Received April 3, 1919.

"*Kapas Palembang*. Seed of a native-grown cotton from Kampong Poeloe, Mandi, Asahan, Sumatra. It grows to be a small tree." (*Bartlett*.)

47365. LITHOCARPUS CORNEA (Lour.) Rehder. Fagaceæ.

(*Quercus cornea* Lour.)

From Hongkong, China. Purchased from Mr. W. J. Tutcher, superintendent, Botanical and Forestry Department. Received April 3, 1919.

"An oaklike tree with oblong, sharp-pointed evergreen leaves 2 to 4 inches long, which are smooth and green on the under side; interesting particularly as bearing acorns as hard-shelled as the nuts of the American hickory, which contain a kernel almost as sweet as the sweetest Spanish chestnut. Said to be a very interesting ornamental as grown on the island of Hongkong." (*David Fairchild*.)

For previous introduction, see S. P. I. No. 10633.

47366 to 46368. ACACIA spp. Mimosaceæ.**Acacia.**

From Tangier, Morocco. Presented by M. Jules Goffart. Received April 3, 1919.

47366. ACACIA BUXIFOLIA A. Cunn.

An Australian shrub with slender twiggy branches bearing nearly erect, lanceolate, glabrous phyllodia and racemes, longer than the leaves, of four to six globose heads of deep-yellow flowers. (Adapted from *Hooker, Icones Plantarum, vol. 2, pl. 164.*)

47367. ACACIA HOLOSERICEA A. Cunn.

This shrub or small tree from Australia is interesting because of the white, silky pubescence which covers the branches and leaves. The branchlets are 3-angled; the obliquely acute phyllodia are 4 to 6 inches long; and the flowers are in spikes 2 inches long. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 187.*)

47368. ACACIA NOTABILIS F. Muell.

A tall handsome shrub found on the slopes of the mountains in New South Wales and South Australia. The sword-shaped, almost linear, phyllodia are 4 to 6 inches long, and the dense globular heads, of about 50 flowers each, are borne in short racemes. (Adapted from *Bentham, Flora Australiensis, vol. 2, p. 365.*)

47369. PHORMIUM TENAX Forst. Liliaceæ.**New Zealand flax.**

From Auckland, New Zealand. Purchased through Mr. J. W. Poynton. Received April 3, 1919.

"Good *Phormium tenax* seed, purchased from a local seedsman. The variety has no name; in fact, the plant does not vary much, it is known as 'good' or 'poor' according to its size and fiber content." (*Poynton*.)

47370. PHYLLOSTACHYS PUBESCENS Houzeau. Poaceæ. Bamboo.

From Anderson, S. C. Rhizomes purchased from Mr. Rufus Fant. Received April 3, 1919.

"Mr. Fant's account of this clump [from which these rhizomes were taken] is that about twenty years ago he saw the 'Giant Japanese Bamboo' advertised in a florists' paper by H. H. Berger, of San Francisco. He sent the money and bought a plant, or rather a piece of rhizome; it died. He sent again and got a pot-grown plant; he was afraid this was not hardy, so kept it potted for about five years, until it outgrew the pot, and then planted it out of doors where it now stands. In 1912 he formed the idea of starting a grove along a little stream which runs through Silver Brook Cemetery, not far from his house. So he took up a clump of bamboo in February and planted it there—we counted, together, 266 good-sized canes about 30 feet tall. One is $12\frac{1}{2}$ inches in circumference 1 inch above the ground. The range is from 5 to $12\frac{1}{2}$ inches in circumference.

"On each side of his house Mr. Fant has plantings of this true Moso bamboo, *Phyllostachys pubescens*, or *P. mitis* as it was formerly called. On the right the clump had been cut back and was low and bushy; on the left the culms were tall, almost to the roof of the 2-story house. Mr. Fant explained that the clump on the right had been killed or at least seriously injured by a freeze of $+2^{\circ}$ F., which occurred February 15, 1918. He had cut the bamboo to the ground as soon as the new growth began, April 15, so that the dead culms were annoying for only two months. By May 10 the bushy growth had attained its present height. This is an important fact, for it indicates how quick will be the recovery from frost injury and of how little consequence is the fact that once in a while the grove may be killed down. The house protected the clump on the sheltered side." (*David Fairchild, Report of Southern Trip, 1918.*)

47371 to 47374. THEOBROMA CACAO L. Sterculiaceæ. Cacao.

From Dominica, British West Indies. Presented by Mr. Joseph Jones, curator, Botanic Gardens. Received April 7, 1919. Quoted notes by Mr. Jones.

47371. "The *Calabash* cacao. It is the hardiest of all varieties and yields the lowest grade of cacao."

47372. "A *Forastero* variety, with red-colored pods; very prolific."

47373. "A *Criollo* variety, with yellow-colored pods; yields seeds of good quality."

47374. "A *Yellow Forastero* variety, with yellow-colored pods; yields seeds of good quality."

47375 to 47377. LITCHI CHINENSIS Sonner. Sapindaceæ. Lychee.

(*Nephelium litchi* Cambess.)

From Honolulu, Hawaii. Cuttings presented by Mr. J. E. Higgins, horticulturist, Hawaii Agricultural Experiment Station. Received April 8, 1919. Quoted notes by Mr. Higgins.

47375. "No. 1083. This is the lot received from you through Seattle in 1907."

47376. "No. 1265. *Kwai mi*."

The *Kwai mi* (or *Kuei wei*) is a very popular commercial variety. The fruit has a very rough but pretty red skin, which is often tinged with green. Fruits of the *Kwai mi* the skin of which is altogether red are said to be very inferior to those with the green markings. This green

47375 to 47377—Continued.

color of the skin usually appears on the shoulders. There is usually a line or constriction in the skin, running around the fruit, which is quite characteristic. The roughened character of the skin, which is quite prickly, is another prominent feature of this variety. The seed of the *Kwai mi* is very small and dry. The flavor of the flesh is very sweet and fragrant, from which the variety doubtless gets its name of "cinnamon flavor." (Adapted from *Groff, The Lychee and Lungan*, p. 93.)

47377. "No. 1266. *Hak ip*."

The *Hak ip* (or *Hei yeh*) is one of the most widely known and popular varieties in Kwangtung. It is widely planted, but certain places are known to produce fruits of the better types. A characteristic feature of the *Hak ip* is the color of the leaves, which are very dark and from which the variety gets the name "Black leaf." The leaves are long and wide, pointed, and slightly curled. The tree is densely covered with them. The petioles are quite long. The fruit ripens in June and July, the season in which the best lychees appear. It is a medium-sized fruit with thin, soft skin. The shoulders are wide. The color is not so red as that of many varieties and is tinged with green. The seed is usually fully developed, of good size, and readily germinates. The inside of the skin, and sometimes the flesh, is slightly pink. The flesh is sweet and crisp. This variety is said to be one of the best of the "water lychees," but it is also recommended for upland conditions if sufficient water for irrigation is assured. It is a beautiful tree and widely used as an ornamental. (Adapted from *Groff, The Lychee and Lungan*, p. 95.)

47378. CUCURBITA PEPO L. Cucurbitaceæ.**Squash.**

From Shanghai, China. Presented by Mr. F. J. White, president, The Shanghai Baptist College and Theological Seminary. Received April 8, 1919.

"This squash is a greenish bronze, round, and ribbed; the flesh is remarkably thick and of very good quality. There is hardly any cavity at all inside the squash." (*White*.)

47379 to 47395. TRITICUM AESTIVUM L. Poaceæ.**Wheat.**

(*T. vulgare* Vill.)

From Queensland, Australia. Presented by Mr. H. C. Quodling, Director of Agriculture, Brisbane. Received April 9, 1919.

"Most of these varieties of wheat were grown at the Roma State Farm and are known so far only by letters and numbers corresponding with the records at the particular institution." (*Quodling*.)

47379. *Amby*.

47388. *B × I P 1*.

47380. *Bunge*.

47389. *B × I P 2*.

47381. *Coronation*.

47390. *B × Man 5*.

47382. *Haidee*.

47391. *B × Man 7*.

47383. *Soutter's Early*.

47392. *Bp × Bl 45*.

47384. *Warren*.

47393. *B × W P 50*.

47385. *Beloturka × Florence 3*.

47394. *C. C. C*.

47386. *B × F 33*.

47395. *343 × 18*.

47387. *B × F 96A*.

47396. TRIPSACUM LANUM Nash. Poaceæ. Guatemala grass.

From Alta Vera Paz, Guatemala. Presented by Kensett Champney & Co., Finca Sepacuite. Received May 2, 1919.

"Introduced originally from Guatemala by Mr. G. N. Collins who states that it grows wild rather extensively in the vicinity of Alta Vera Paz, Guatemala, and is known to the natives as *pal*. No use is made of it by the natives.

"Guatemala grass has grown very luxuriantly at Miami, Fla., for the past three years. The canes become an inch or more in diameter and grow to a height of about 12 feet. The nodes are numerous and the texture of the stems rather soft and juicy with a somewhat mucilaginous sweetish sap. The leaves are from 2 to 3 inches broad and are rather strongly armed on the margins with minute sharp teeth. These teeth are the only objectionable feature to the grass, as if carelessly handled the leaves will cut the hands. The grass looks exceedingly promising for either silage or for green feed. At Miami canes are often left over winter and have fallen down and become procumbent, and these canes have produced flowers in abundance but no good seed. Therefore all distributions of the grass made thus far have of necessity been of pieces of the cane, from which the grass grows very readily." (*C. V. Piper.*)

An illustration of this grass as it grows at Miami, Fla., is shown in Plate I.

47397. GOSSYPIMUM sp. Malvaceæ. Cotton.

From Algiers Algeria. Presented by Dr. L. Trabut. Received April 12, 1919.

"I have received from a correspondent at Djibouti a cotton which he has selected and which he characterizes as 'Coton Gabod,' obtained at Djibouti, at Din Davena. It is satisfied with an annual rainfall of 300 mm. in a very hot country, in siliceous-argillaceous soil: not irrigated for two years." (*Trabut.*)

47398 and 47399. DIOSCOREA ALATA L. Dioscoreaceæ. Yam.

From St. Lucia, British West Indies. Tubers presented by Mr. Samuel Rosen, New York. Received April 12, 1919. Quoted notes by Mr. R. A. Young.

47398. "A white-fleshed yam of medium size. It is quite moist when cooked, but makes an excellent dish when mashed and beaten thoroughly."

47399. "A medium-sized yam of good quality, with yellowish flesh."

47400. SCHRANKIA sp. Mimosaceæ.

From Bahia, Brazil. Presented by Dr. V. A. Argollo Ferrão. Received April 12, 1919.

"A kind of sensitive plant that forms a small bush and appears to make a forage crop as well as a green manure. Mules and cattle are fond of it. This seed was collected from plants growing in an orchard on argillaceous soil." (*Argollo Ferrão.*)

47401 and 47402.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received April 15, 1919.

47401. CESTRUM PARQUI L'Her. Solanaceæ.

A semihardy, nearly glabrous shrub, native to Chile. The leaves are lanceolate to oblong and the long tubular flowers are sessile in open panicles, greenish yellow, and very fragrant at night. It is much

47401 and 47402—Continued.

grown in warm countries where it blooms continuously. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 2, p. 727.)

47402. HYPHAENE THEBAICA (L.) Mart. Phœnicaceæ. Doum palm.

An Egyptian palm, 3 to 9 meters in height, with a trunk about 30 centimeters in diameter.

For previous introduction, see S. P. I. No. 45004.

47403 to 47408. THEOBROMA CACAO L. Sterculiaceæ. Cacao.

From Port of Spain, Trinidad, British West Indies. Seeds and pods presented by Mr. R. S. Williams, Acting Director of the Department of Agriculture. Received April 15, 16, and 17, 1919.

"Pods of each of six varieties of our best-bearing types of *Forastero cacao*." (Williams.)

47403. 1a.

47406. 4a.

47404. 2a.

47407. 5a.

47405. 3a.

47408. 6a.

47409 to 47415. RIBES spp. Grossulariaceæ. Currant.

From Middle Green, Langley, Slough, England. Plants purchased from Mr. J. C. Allgrove. Received April 17 and 19, 1919.

Introduced for breeding experiments.

47409 and 47410. RIBES NIGRUM L.

Black currant.

47409. Carter's Champion.

47410. Ogden's Black.

47411 to 47415. RIBES VULGARE Lam.

Garden currant.

47411. American Wonder.

47414. La Versailles, red.

47412. Cherry.

47415. Warner's grape, red.

47413. For's Large Grape, red.

47416 to 47422.

From Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser, Zamboanga. Received April 17, 1919. Quoted notes by Mr. Wester.

47416. GYNURA SARMENTOSA (Blume) DC. Asteraceæ.

"A climber with panicles of orange-colored flowers which have a pronounced odor similar to that of the field daisy. It is very floriferous. If it succeeds it would make a very striking and attractive climber. Collected at an altitude of 1,500 feet in Mindanao."

47417 to 47420. RUBUS spp. Rosaceæ.

"Four species of *Rubus* sent to me from the Mountain Province [Luzon] without any vernacular names or description, and I am therefore unable to give any information as to what species they are."

47417. RUBUS sp.

A large-seeded form.

47418. RUBUS sp.

A form with medium-sized seeds.

47419. RUBUS sp.

Small seeded; apparently small fruit.

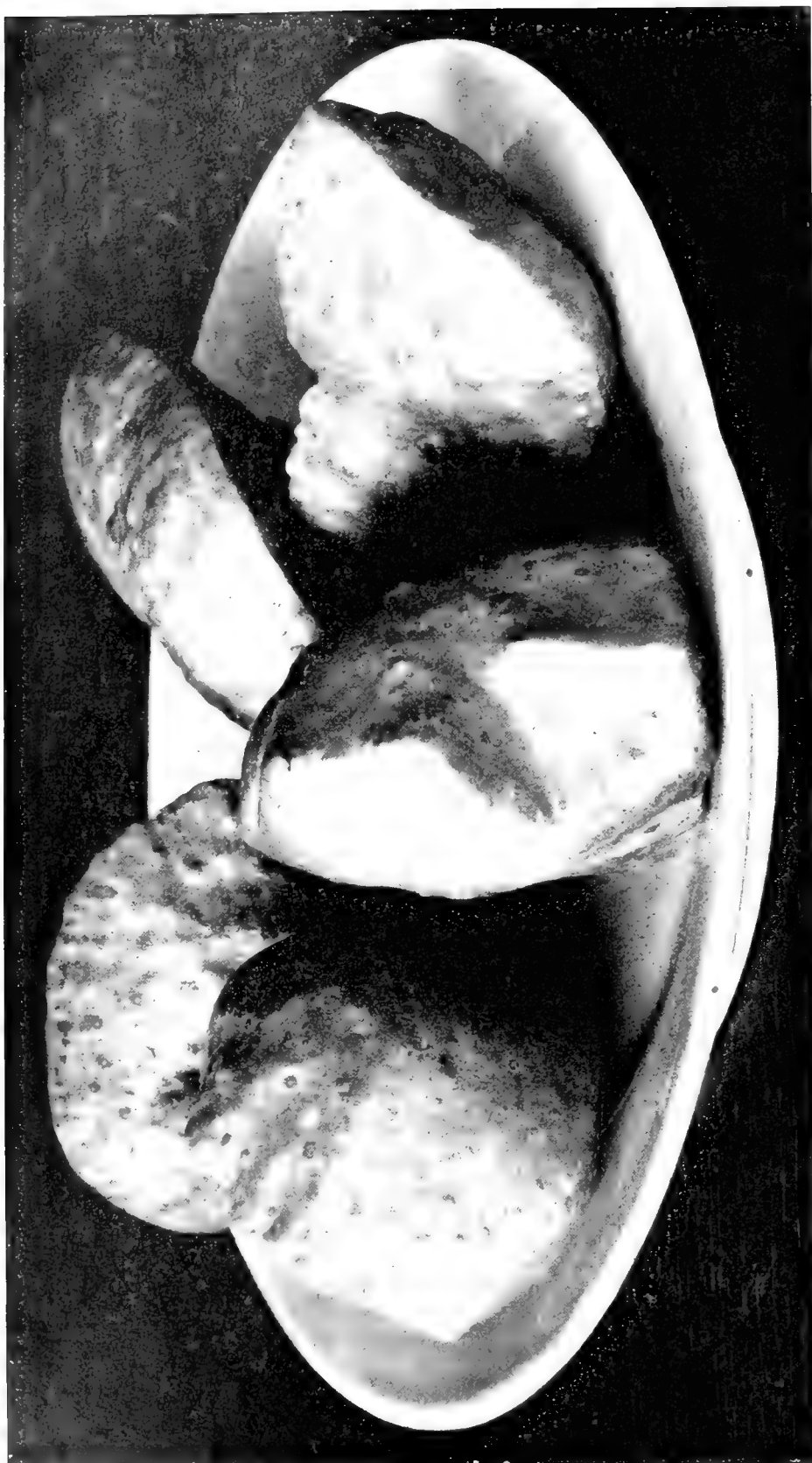
47420. RUBUS sp.

Small seeded; apparently medium-sized fruit.



A CLUMP OF GUATEMALA GRASS AT MIAMI, FLA. (TRIPSACUM LAXUM NASH., S. P. I. No. 47396.)

Guatemala grass, a new forage crop for the South, introduced in 1919, has been found valuable in southern Florida, where it is now being planted extensively by dairymen and others. On ordinary soil it reaches 6 to 8 feet in height; on muck lands it grows even larger and produces 20 to 60 culms to a clump. The stems are juicy practically to the base, and cattle eat them with great avidity. Propagation is easily effected by means of the joints, which should be placed in moist moss and roots allowed to develop before they are planted in the field. The species, which will not tolerate much frost, gives promise of an important future in Florida as a soiling and silage crop. (Photographed by Peter Bisset, Miami, Fla., December 10, 1917; P2557-S.F.S.)



A DISH OF THE ACOM. (*DIOSCOREA LATIFOLIA BENTH.*, S. P. I. No. 47564.)

The acom, one of the tropical yams, is almost unique among the edible species of this genus in that the tubers are aerial, being borne in the vine axils of the leaves instead of underground. The flesh of the tubers is yellowish, very dry, and firm, with a distinctive flavor. While perhaps not of such high table quality as some of the white-fleshed yams, the exceptional keeping qualities of the acom may give it a place of considerable value in our markets when the right conditions for growing it in this country are found. It is much esteemed where grown in Brazil. (Photographed, slightly reduced, by E. L. Crandall, from tubers grown at the Plant-Introduction Garden, Brooksville, Fla., April 24, 1920; P25411FS.)

47416 to 47422—Continued.

47421 and 47422. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. **Cowpea.**

"Two varieties of sitao, *Vigna sinensis*, a climbing bean with long, slender, flexible pods that may be eaten as string beans and are of good quality when picked young and tender."

47421. *Tentdog.*

47422. *Inombog.*

47423. *DIMOCARPUS LONGAN* Lour. Sapindaceæ. **Longan.**
(*Nephelium longana* Cambess.)

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received April 22, 1919.

"The fruits of this longan are small but excellent. Plants of this variety grown from seed bear well and would certainly grow in Florida." (*Regnard.*)

47424 and 47425.

From Guayaquil, Ecuador. Presented by Dr. Frederic W. Goding, American consul general. Received April 21, 1919. Quoted notes by Dr. Goding.

47424. *ACHRADELPHA MAMMOSA* (L.) O. F. Cook. Sapotaceæ. **Sapote.**
(*Lucuma mammosa* Gaertn. f.)

"A fruit about the size of a teacup, resembling a potato in general appearance and having a rough, dark greenish brown skin mottled with sordid yellow. The edible portion is red, soft, and sweet, with a peculiar but pleasant flavor; in the center of the edible portion is a shuttle-shaped seed about 2 inches long, of a chestnut-brown color, and always split along one side. Within the hard, thin, shining shell is a white kernel."

47425. *MAMMEA AMERICANA* L. Clusiaceæ. **Mamey.**

"From the injured skin of the *mamey de Cartagena* exudes a resinous, gummy juice which is much used for killing chigoes and lice when applied locally. Animals suffering with mange and sheep ticks are cured by washing in a decoction made by boiling the seeds in water; if, however, ulcers are present it should not be employed—as a case is known of a dog suffering from mange and ulcers, but otherwise healthy, that died in two days after having been bathed twice in the solution. Used in the form of a cerate it kills many varieties of insects. An infusion of the fresh or dry leaves (one handful to a pint of water in cupful doses) given during the intervals of fever, has repeatedly cured intermittents and remittents which did not yield to the quinine salts. The treatment should be continued for several days. A yellow and violet-scented liquor is made from the fruit and flowers and is a very delicious beverage. The fruit eaten green or ripe, or in preserves, possesses beneficial stomachic qualities."

47426 to 47428. COIX LACRYMA-JOBI L. Poaceæ. Job's-tears.

From Buitenzorg, Java. Presented by Dr. W. Docters van Leeuwen, director, Botanic Garden. Received April 22, 1919.

47426. Fruit narrowly ovate, twice as long as broad, pearl gray.

47427. Fruit nearly spherical; the ordinary variety.

47428. Fruit narrowly ovate, $2\frac{1}{2}$ times as long as broad, grayish brown.

47429 and 47430. HIBISCUS SABDARIFFA L. Malvaceæ. Roselle.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received April 23, 1919.

"Var. *altissima*. Because of the fibrous and spiny character of the small calyces of the two forms belonging to the *altissima*, they have no culinary value. However, their habit of growth is favorable to the production of a long fiber; and, according to Mr. M. M. Saleeby, chief of the fiber division of this Bureau, the two forms of this variety are far superior to jute and to all other varieties of roselle (including four from India) in habit, growth, and yield. As yet the problem of utilization of the fiber of the *altissima* has not been carefully studied, but it is apparently suitable for all uses in which jute fiber is now employed." (*Wester, Philippine Agricultural Review, vol. 7, p. 268.*)

47429. *Altissima* roselle, red. **47430.** *Altissima* roselle, white.

47431. DIMOCARPUS LONGAN Lour. Sapindaceæ. Longan.
(*Nephelium longana* Cambess.)

From Port Louis, Mauritius. Presented by Mr. Gabriel Regnard. Received April 24, 1919.

"The longan has fruited successfully both in Florida and California. The quality of the fruit, however, is inferior; and the principal interest which this species now has for us is in connection with lychee culture, as it is possible that it may be of value as a stock for the lychee in certain regions." (*Wilson, Popenoe.*)

47432 and 47433. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. Sweet potato.

From Mayaguez, Porto Rico. Tubers presented by Mr. T. B. McClelland, horticulturist, Porto Rico Agricultural Experiment Station. Received April 24, 1919.

"Tubers of two varieties of the mamey type of sweet potato from the eastern part of the island. The donor distinguishes these as *Mameyona*, or large mamey, and *mameyita*, or small mamey. He prefers the *mameyita*, if it is eaten immediately after digging, but says that the *mameyona*, if kept for a week, has the better flavor. However that may be, both belong to the best type of Porto Rican [sweet] potato." (*McClelland.*)

47432. *Mameyona*.

47433. *Mameyita*.

47434. ANNONA SQUAMOSA L. Annonaceæ. Sugar-apple.

From Rio de Janeiro, Brazil. Presented by Mr. T. R. Day, chief, Industrial Department, Leopoldina Railway Co., Ltd. Received April 29, 1919.

"Seed of the *pinha* (fruta de conde), of a very special variety. This is not the very large kind, but it is the best flavored I have ever found in the country. This fruit will grow in southern Florida." (*Day.*)

47435. VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ. Yard-Long bean.

From Gatun, Canal Zone. Presented by Mr. George E. Hardwick. Received April 29, 1919.

"A bean the pods of which grow to a length of 15 to 20 inches." (*Hardwick.*)

47436 and 47437. SOJA MAX (L.) Piper. Fabaceæ. Soy bean.
(*Glycine hispida* Maxim.)

From Wakamatsu, Japan. Presented by Rev. C. Noss. Received April 29, 1919.

47436. Received as *Ogon daizu*. Seeds large, nearly spherical, golden yellow. The seeds, however, agree with those of S. P. I. No. 40371, *Dekisugi*.

47437. Received as *Hato koroshi daizu*. The seeds agree, however, with those of S. P. I. No. 40119, *Usuao*.

47438 and 47439.

From Bahia, Brazil. Presented by Sr. V. A. Argollo Ferrão. Received May 2, 1919. Quoted notes by Sr. Argollo Ferrão.

47438. CROTALARIA sp. Fabaceæ.

"A species from the coast, which grows in sandy land."

47439. CROTALARIA sp. Fabaceæ.

"A species from the mountains of Villa Nova, which grows in red soil formed by decomposed granitoid rocks."

47440. ATTALEA GOMPHOCOCCA Mart. Phœnicaceæ. Palm.

From Puntarenas, Costa Rica. Presented by Mr. A. Garrido. Received August 22, 1918. Numbered May, 1919.

An ornamental palm, native to Costa Rica, 20 to 30 feet high, crowned by a magnificent cluster of large leaves with very numerous linear or linear-lanceolate leaflets, bright green above and paler beneath. The fruit is fibrous coated. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 428.*)

47441 to 47445.

From Burringbar, New South Wales. Presented by Mr. B. Harrison. Received April 30, 1919. Quoted notes by Mr. Harrison.

47441. CHENOPODIUM sp. Chenopodiaceæ.

"*Blackham's saltbush*. A species of *Chenopodium* grown in South Australia for fodder."

47442 and 47443. CUCUMIS MELO L. Cucurbitaceæ. Muskmelon.

47442. "Large rock melon. Seed saved from a specimen weighing 18 pounds."

47443. "The *Egyptian* or *Shenum* rock melon, which weighs about 18 pounds."

47444 and 47445. CUCURBITA MAXIMA Duchesne. Cucurbitaceæ.

Pumpkin.

47444. "*Iron bark* pumpkin. An unrivaled table variety and a good keeper, 8 or 10 pounds in weight."

47445. "*Crown* pumpkin. A splendid table variety, very prolific and a good keeper, 5 to 10 pounds in weight."

47446. DIOSCOREA ALATA L. Dioscoreaceæ.**Yam.**

From Honolulu, Hawaii. Tubers presented by Mr. J. E. Higgins, horticulturist, Hawaii Agricultural Experiment Station. Received May 1, 1919.

"This yam, understood to be the best variety grown in Hawaii, has purple skin and flesh that is a little dark when cooked. Like many other varieties it is somewhat moist when cooked. Besides being boiled and mashed—a favorite method of preparation—yams may be baked or, after being boiled, may be sautéed or made into a salad like potatoes. The yam makes an especially good salad." (*R. A. Young.*)

47447. PHASEOLUS LUNATUS L. Fabaceæ.**Lima bean.**

From Guelph, Ontario, Canada. Presented by Mr. James A. Neilson, Ontario Agricultural College. Received May 6, 1919.

"Lima beans which were grown near Iroquois, Ontario, in the garden of Mr. Leigh Harkness. Mr. Harkness states that this strain of beans has been grown by members of his family since 1876. The seed was first procured from a seedsman in Philadelphia, Pa. During the first few years that the beans were tried at Iroquois comparatively few ripened; but through selection of the earliest maturing and most productive plants for seed, a strain has been isolated which matures in a latitude which is farther north than where Lima beans can usually be grown.

"During the past summer I had the privilege of going through Mr. Harkness's garden and was very favorably impressed with the fine appearance of the beans. The plants were not very large, being about 16 to 18 inches in height and of about the same breadth, but they were very productive. I will venture to say that some of the plants produced as many as 75 pods from 3 to 4 inches in length.

"Iroquois is in Dundas County and is approximately 44° 45' north latitude. Considering the fact that Lima beans are native to climates which are much warmer than that of the St. Lawrence River Valley, I think that Mr. Harkness has attained very good results." (*Neilson.*)

47448 to 47491. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From Edinburgh, Scotland. Tubers purchased from Dobbie & Co. Received May 8, 1919.

Introduced to be tested by the specialists of the Department for resistance to potato wart.

EARLY VARIETIES.

47448. *America*.47449. *Arran Rose*.47450. *Dargill Early*.47451. *Eclipse*.47452. *Edzell Blue*.47453. *Eightyfold*.47454. *Epicure*.47455. *Exhibition Red Kidney*.47456. *May Queen*.

EARLY VARIETIES—continued.

47457. *Midlothian Early*.47458. *Resistant Snowdrop*.47459. *Sharpe's Express*.47460. *Witch Hill*.

SECOND EARLY VARIETIES.

47461. *Arran Comrade*.47462. *British Queen*.47463. *Climax*.

47448 to 47491—Continued.

SECOND EARLY VARIETIES—continued.

47464. *Great Scot*.
 47465. *Mauve Queen*.
 47466. *King George*.
 47467. *The Ally*.
 47468. *The Duchess*.

LATE VARIETIES.

47469. *Arran Chief*.
 47470. *Arran Victory*.
 47471. *Burnhouse Beauty*.
 47472. *Golden Wonder*.
 47473. *Irish Queen*.
 47474. *Kerr's Pink*.
 47475. *King Edward*.

The following two numbers are seedlings from the cross *Snowball* × *Myatt's Ashleaf*:

47490. No. 3. M. T.

LATE VARIETIES—continued.

47476. *Langworthy*.
 47477. *Lochar*.
 47478. *Majestic*.
 47479. *Nithsdale*.
 47480. *Rector*.
 47481. *St. Andrew*.
 47482. *Templar*.
 47483. *The Bishop*.
 47484. *The Factor*.
 47485. *The Favorite*.
 47486. *The Provost*.
 47487. *Tinwald Perfection*.
 47488. *Up-to-Date*.
 47489. *White City*.

47491. No. 16. M. T.

47492. CARICA PAPAYA L. Papayaceæ.**Papaya.**

From Richmond, Jamaica, British West Indies. Presented by Mr. Henry B. Wolcott. Received May 10, 1919.

"The development of commercial papaya culture depends upon obtaining hardier types which are suitable for market purposes. For this reason, seed is desired from all of the important regions in the Tropics where papayas are commonly grown. Jamaica is one of the best known of these regions." (*Wilson Popenoe*.)

47493 to 47495. DIOSCOREA spp. Dioscoreaceæ.**Yam.**

From Singapore, Straits Settlements. Tubers presented by Mr. I. Henry Burkill, director, Botanic Gardens. Received April 17, 1919.

47493. DIOSCOREA BULBIFERA L.

This yam grows wild in Sylhet, Chittagong, and throughout the western Ghats to Bombay, and it is cultivated in the Western Presidency, especially in the Konkan. The tubers, after being dried and powdered, are applied to ulcers. The bulbules on the stems and the tubers under ground are used as vegetables. The latter are bitter, but are rendered eatable by being covered with ashes and steeped in cold water. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 3, p. 128.)

47494. DIOSCOREA HISPIDA Dennst.

Mr. Burkill says in his letter announcing the shipment of these yams that this one is "poisonous, but its starch has been used in these parts from time immemorial when famine presses."

47495. DIOSCOREA sp.

"A fingered, lobulate yam from the Philippines. It is related to *Dioscorea pentaphylla* or to *D. cumingii*; excellent cooked, but the yield is too small." (*Burkill*.)

47496 to 47503.

From Entebbe, Uganda. Presented by the chief forestry officer, Forestry Department. Received April 29, 1919.

47496. ACACIA sp. Mimosaceæ.

An ornamental shrub or tree, with handsome foliage and cylindrical spikes or globular heads of yellow flowers.

47497. CHLOROPHORA EXCELSA (Welw.) Benth. and Hook. Moraceæ.

This is a valuable timber tree, native throughout most of tropical Africa. The wood is whitish, gradually changing to pale bay, and it is durable and easily worked. The tree often reaches a height of 130 feet, with a diameter of 10 feet, the trunk bare of branches for 60 feet. The thin, leathery, elliptic leaves are 6 to 7 inches long. The flowers, borne in dense spikes, are of two kinds: The staminate having long exerted white stamens, while the pistillate are inconspicuous. The slightly fleshy fruits are greenish yellow. (Adapted from Prain, *Flora of Tropical Africa*, vol. 6, pt. 2, p. 22.)

47498. ERYTHBINA EXCELSA Baker. Fabaceæ.

A tree, native to upper Guinea, growing to a height of 60 feet. It has glabrous branches which are armed with numerous sharp, straight, short prickles. The leaves are trifoliate, the broadly ovate central leaflet being 9 inches long. The bright-scarlet flowers are borne in dense racemes about 6 inches long. (Adapted from Oliver, *Flora of Tropical Africa*, vol. 2, p. 183.)

47499. MARKHAMIA PLATYCALYX (Baker) Sprague. Bignoniaceæ.
(*Dolichandrone platycalyx* Baker.)

A tree, 30 to 40 feet high, known in Uganda, where it is native, under the name *lusambia*. It is said to yield the finest of local timbers. The compound leaves are made up of five to nine obovate leaflets and the flowers, which are yellow striped with red, are borne in axillary and terminal panicles. (Adapted from Thiselton-Dyer, *Flora of Tropical Africa*, vol. 4, pt. 2, p. 525.)

47500. MONODORA MYRISTICA (Gaertn.) Dunal. Annonaceæ.

Calabash nutmeg.

A large, branching tree, native to Africa. The shining, pale-green leaves are confined to the ends of the branches. The fragrant flowers, borne singly in the axils of the leaves, are about 6 inches across, with 3 spreading, wavy-margined, yellow petals and three erect, creamy white petals, all six dotted with red. The fruit, 4 to 6 inches in diameter, contains a number of cylindrical seeds each about 1 inch long which have a flavor closely resembling that of the nutmeg. (Adapted from Curtis's *Botanical Magazine*, pl. 3059.)

47501. PAHUDIA AFRICANA (Smith) Prain. Cæsalpiniaceæ.
(*Afzelia africana* Smith.)

This large forest tree is a native of the Niger and Kongo Valleys in western Africa. The abruptly pinnate leaves are made up of four to five pairs of elliptical, thinly coriaceous leaflets 3 to 5 inches long. The small, white and red, fragrant flowers are borne in lax or dense racemes and are followed by smooth, thick, woody pods containing about 10 seeds. (Adapted from Oliver, *Flora of Tropical Africa*, vol. 2, p. 302.)

47496 to 47503—Continued.**47502. SPATHODEA NILOTICA Seem. Bignoniaceæ.**

This is a bushy tree up to 20 feet in height; native to the upper Nile Valley and the Belgian Kongo. The opposite leaves are made up of 9 to 15 leathery leaflets covered with dense short hairs beneath. The scarlet flowers are borne in short, dense, terminal racemes and resemble closely those of the well-known *Spathodea campanulata*. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 4, p. 529.*)

47503. SYZYGIUM sp. Myrtaceæ.

A shrub or small tree probably bearing edible fruits; closely related to the *Eugenias*.

47504 to 47507. ELAEIS GUINEENSIS Jacq. Phœnicaceæ.**Oil palm.**

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Division of Plant Breeding, Department of Agriculture. Received April 24, 1919.

The oil palm is indigenous to the Guinea coast, where travelers found it used by the natives as early as the sixteenth century. From there it has gradually been disseminated throughout the Tropics.

The palm attains 15 to 20 meters in height; its trunk is erect and straight; the trees are monœcious, and the pistillate flowers develop into fruits (drupes) of the form and size of a prune, yellow or brownish at maturity, according to variety.

These fruits, numbering 1,000 to 1,500 upon a raceme, have a hard, woody endocarp surrounded with a fibrous and at the same time fleshy pulp, varying in thickness according to variety, and containing much oil. The seed contains an oleaginous kernel which is exported to Europe under the name *palmiste*.

In his *Documents sur le Palmier à Huile*, Chevalier mentions several varieties of this plant, differing in production and the quality of their oil. The development of improved varieties will be a matter of great importance.

The racemes are harvested by natives who are very skillful in climbing the palms. The principal season of ripening is toward the end of the rains, but the harvest continues more or less throughout the year.

The fruit yields two sorts of oils: One is extracted from the pulp (*huile de palme*) and the other from the seed (*huile de palmiste*).

Huile de palme is seen in Europe only in the solid state, since it does not become liquid at a lower temperature than 40° C. It is orange-yellow in color. When fresh it has a faint odor of violets and is employed by the natives who use it very extensively in cooking. It becomes rancid very quickly. Commercially, it is used in soap making.

In its native home (Dahomey, for example) the oil is extracted by fermenting the fruits in jars for several days; they are then mashed, the nuts are taken out, and the pulp is boiled in large kettles of water. The oil rises to the surface of the water and is skimmed off. Its purification is later brought about by boiling it for some time. The nuts, clean of pulp, are then broken with stones or hammers. The kernel (*palmiste*) is removed and dried, after which it is ready for use. These dried kernels are exported to Europe, and yield under pressure 40 to 42 per cent of palmiste oil which is white and has a melting point of about 25° C. This oil is employed in the making of fine soap. (Adapted from *Capus et Bois, Les Produits Coloniaux, 1912, p. 294.*)

The following are selected strains:

47504. "*Banga* K. 46 I."

47506. "*Nsombo* C. 42 II."

47505. "*Banga* K. 54 I."

47507. "*Nsombo* D. 24 II."

47508 and 47509. PSIDIUM GUAJAVA L. Myrtaceæ. Guava.

From San Marcos, Cuba. Presented by Mr. Robert Reid. Numbered in May, 1919.

"I am sending you two packages of seed of Peruvian guava, white and pink. The white is the best guava." (*Reid.*)

47508. White.

47509. Pink.

47510 to 47512.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received May 12, 1919. Quoted notes by Mr. Wester.

47510. BOTOR TETRAGONOLOBA (L.) Kuntze. Fabaceæ. Goa bean.
(*Psophocarpus tetragonolobus* DC.)

"*Seguidilla*. A climbing bean with 4-winged pods which, when used as string beans while tender, are of excellent quality. They should be of great value in Porto Rico and Panama."

47511. DRACAENA sp. Liliaceæ.

"This *Dracaena* may prove a good pot plant for the conservatory, and of course for culture out of doors in Porto Rico and southern Florida."

47512. GYNURA SARMENTOSA (Blume) DC. Asteraceæ.

"The *Gynura* is a composite climber. It is a plant worthy of all the care possible to establish it in the West Indies and Florida."

**47513. PHYTELEPHAS MACROCARPA Ruiz and Pav. Phœnicaceæ.
Ivory-nut palm.**

From Para, Brazil. Burs purchased from Mr. George H. Pickerell, American consul. Received May 13, 1919.

An arborescent palm with a thick, rough, creeping trunk, from the under surface of which roots are given off; native to South America and Central America. The leaves which crown the trunk closely resemble those of the coconut palm in size, shape, and disposition. The flowers emit a strong perfume, especially the large, white, pistillate flowers which are, however, few in number. The fruits grow on the trunk just above the bases of the leaves in bunches of six or seven, and are called *cabeza de negro* by the natives of Colombia. The albumen of the seed is the so-called vegetable ivory, and this becomes whiter and more opaque on exposure to the air. (Adapted from *The West Indian Bulletin*, vol. 9, p. 279.)

47514. PHYSALIS PERUVIANA L. Solanaceæ. Poha.

From Sawtelle, Calif. Presented by Mr. P. D. Barnhart, superintendent, Danziger Estate, Beverly Hills. Received May 13, 1919.

"Native to temperate and tropical America, widely naturalized in many countries of the warmer zones. With double inaptness called the Cape gooseberry. A perennial herb; but for producing its fruit well it requires early renovation. The acidulous berries can be used as well for table fruit as for preserves. The dried fruit acts as a substitute for yeast. Doubtless several

other kinds of *Physalis* can be utilized in the same manner. In colder countries *Physalis peruviana* becomes annual. Seeds will keep for eight years." (Mueller, *Select Extra-Tropical Plants*, p. 377.)

47515. STEVIA REBAUDIANA Bertoni. Asteraceæ.

From Asuncion, Paraguay. Presented by Mr. H. H. Balch, American consul.
Received May 5, 1919.

Kaá-Heé. "This Paraguayan herb is of peculiar interest because of the very large saccharin content of the leaves. A fragment placed on the tongue seems sweeter than a lump of sugar of similar size. Several years ago the discovery that this plant, then called eupatorium, contained a substance many times sweeter than sugar was heralded by the press and excited the keen interest of sugar planters all over the world. The substance turned out to be a glucosid, and the anxiety of the sugar interests subsided." (David Fairchild.)

47516. ACHRADELPHA MAMMOSA (L.) O. F. Cook. Sapotaceæ.

(*Lucuma mammosa* Gaertn. f.)

Sapote.

From Laguna, Philippine Islands. Presented by the Bureau of Agriculture, Manila. Received May 14, 1919.

"One of the most important fruits of the Central American lowlands, well known to the Indians since time immemorial. It is wild in many regions, notably southern Mexico and Guatemala. It occurs most abundantly between sea level and 2,000 feet; at 3,000 feet it is still common, while at 4,000 it becomes scarce. It is generally believed that it will not succeed at 5,000 feet, but occasionally trees are seen at this elevation. In the highlands they are slow of growth and the fruit requires a long time to reach maturity.

"In the lowlands the sapote (Spanish orthography *zapote*) is a large forest tree, often 60 feet in height, with a thick trunk and stout branches. The Indians, when clearing land for coffee plantations, usually leave the sapote trees they encounter for the sake of their valuable fruits. The foliage is abundant and light green in color; the leaves are clustered toward the ends of the branchlets and are obovate or oblanceolate in outline, broadest toward the apex, and 4 to 10 inches long. The flowers are very small, produced in great numbers upon the stout branchlets.

"The fruit is elliptical in form, commonly 3 to 6 inches in length but sometimes larger. The skin is thick and woody, externally russet in color and somewhat scurfy. The flesh is salmon red, finely granular in texture, and of sweet, almost cloying flavor, in poor specimens strongly suggesting a squash or pumpkin. The single seed is large, shining brown except on the rough, whitish ventral surface, and is easily removed from the fruit.

"The Indians commonly eat the sapote out of hand. It is occasionally made into a rich preserve, however, and can be used in a few other ways. It is slightly inferior in quality to its near relative, the injerto or green sapote (*Achradelpha viridis*) of Guatemala.

"The seed of the sapote is an article of commerce in Central America. The large kernel is removed, roasted, and used to mix with cacao in the preparation of chocolate. According to some of the Indians, it imparts flavor to the chocolate; others say it is done to increase the bulk of the latter. In view of the high price of chocolate it seems more likely that sapote seeds are used as an adulterant, rather than for their flavor.

"In southern Mexico and Central America this fruit is known as *zapote* (from the Aztec *tzapotl*); in Guatemala the Indians know it under the Maya names *saltul*, *saltulul*, and *tulul*; in Cuba it is called *mamey colorado*; and in the Philippines *chico mamey*." (Wilson Popenoe.)

47517. CACARA EROSA (L.) Kuntze. Fabaceæ. Yam bean.
(Pachyrhizus angulatus Rich.)

From Santiago de las Vegas, Cuba. Presented by Dr. Mario Calvino, director de la Estacion Experimental Agronomico. Received May 19, 1919.

Jicama de agua. These seeds have been introduced for the purpose of determining the botanical differences between the several forms of this species. This form was received under the name *Pachyrhizus tuberosus*.

47518. ZINZIBER OFFICINALE Roscoe. Zinziberaceæ. Ginger.

From Kingston, Jamaica. Roots presented by Mr. W. Harris, superintendent, Hope Gardens, Department of Agriculture. Received May 21, 1919.

This material was procured for experimentation.

47519. TRICHOSCYPHA sp. Anacardiaceæ.

From Loanda, Angola, Africa. Seeds presented by Mr. J. Gossweiler. Received May 21, 1919.

"No. 6882. A diœcious, palm-shaped tree, 25 meters in height, which produces on its trunk, about 2 meters above the ground, large bunches of peachlike, edible, succulent fruits. Quite a distinct, curious, and ornamental plant from Angola. March, 1919." (*Gossweiler*.)

47520 to 47523. TRIFOLIUM ALEXANDRINUM L. Fabaceæ. Berseem.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received May 21, 1919.

"To judge by its behavior at Bard, Calif., berseem seems to have considerable promise as a winter annual for the extreme Southwest. There are still problems in regard to proper planting dates, soil inoculation, etc., to be solved, but for the last three years the yields on the experimental plats at Bard have been large enough to encourage further trials." (*Roland McKee*.)

47520. No. 1.

47522. No. 3.

47521. No. 2.

47523. No. 4.

47524 and 47525.

From Ecuador. Presented by Dr. J. N. Rose, associate curator, U. S. National Herbarium, Washington, D. C. Received May 26, 1919. Quoted notes by Dr. Rose.

47524. CARICA CANDAMARCENSIS Hook. f. Papayaceæ.

"This Carica from Ambato (No. 22354) is very different from the other Carica (S. P. I. No. 46623) collected by me in Ecuador. It has a stout, thick trunk and a large, round top. Unlike most of the other species, male and female flowers are borne abundantly on the same plant. The fruit is small, about 3 inches long, and has three broad, low ribs. It is used chiefly in making dulces. It is usually grown in yards or gardens."

47525. TROPAEOLUM PELTOPHORUM Benth. Tropæolaceæ. Nasturtium.

"Several species of Tropaeolum are to be found in Ecuador. Between Chuncha and Huigra I collected this very interesting one (my No. 22408). It is a small creeping vine with peltate leaves and small yellow or orange flowers."

47526. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. Tomato.

From Naples, Italy. Presented by the Museo Commerciale e Coloniale of Naples, through Mr. B. Harvey Carroll, jr., American consul. Received June 11, 1919.

"Tomato seed of the variety 'fiascone' or 'fiaschetti,' of which the English translation would be 'little flagons' on account of the shape of the tomato. This is the type of tomato most largely grown in this consular district and most used for canning and for making tomato paste." (*Carroll.*)

47527. SAGUERUS PINNATUS Wurm. Phœnicaceæ. Sugar palm.
(*Arenga saccharifera* Labill.)

From Mayaguez, Porto Rico. Presented by Mr. D. W. May, Porto Rico Agricultural Experiment Station. Received May 14, 1919.

"The *gomuti* palm is one of the most useful of palms, and occurs in a wild state throughout the islands of the Indian Archipelago, but is more common in the interior, principally in the hilly districts, than on the sea coast; it is also very generally cultivated by the various people who inhabit that region. It is indigenous to Sonda and the Philippines, and is cultivated generally in tropical Asia. This palm attains a height of 30 to 40 feet and, in addition to its saccharine sap, furnishes a highly valuable black fibrous substance, ejoo fiber, superior in quality, cheapness, and durability to that obtained from the husk of the coconut, and renowned for its power of resisting moisture. It is used by the natives of the Indian islands for every purpose of cordage, and is known as *tsongli*. Underneath this material is found a substance of a soft gosamerlike texture, which is imported into China. It is applied as oakum in caulking the seams of ships, and more generally as tinder for kindling fire. It is for the latter purpose that it is chiefly in demand among the Chinese. In Malacca, the *gomuti*, there termed *kabong*, is cultivated principally for the juice which it yields for the manufacture of sugar." (*Simmonds, Tropical Agriculture, p. 252.*)

47528 to 47530. HEVEA SPRUCEANA (Benth.) Muell. Arg. Euphorbiaceæ.

From Para, Brazil. Presented by M. Au Lims de Vasconcellos Chaves. Received May 17, 1919.

"In the region where the 'seringueira barriguda' occurs I was told that its latex is of inferior quality and not used in the preparation of rubber. It is certain that in the lower Tapajoz country, where this plant appears to be most common, the best rubber is furnished by other species, principally *Hevea brasiliensis*. According to Dr. Ule, in the Jurua region the latex of *H. spruceana* is sometimes mixed with that of *H. brasiliensis*, with the result that the quality of the latter is impaired, and the product is known as 'borracha pobre.'" (*Hu-ber, Observações sobre as Arvores de Borracha da Região Amazonica, p. 11.*)

47528. "Barriguda" 948.

47530. "Barriguda" 950.

47529. "Barriguda" 949.

47531. CUCURBITA sp. Cucurbitaceæ. Squash.

From Guayaquil, Ecuador. Presented by Dr. J. N. Rose, associate curator, United States National Herbarium, Washington, D. C. Received May 26, 1919.

"(Rose No. 24034. Collected August 11, 1918.) A squash found hanging in a tree; the vine was dead so that no foliage or flowering specimen could be obtained." (*Rose.*)

47532. IPOMOEA CAIRICA (L.) Sweet. Convolvulaceæ.*(I. palmata* Forsk.)**Morning-glory.**

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received May 28, 1919.

"Seeds of a white-flowered variety of *Ipomoea cairica*, extremely attractive and floriferous. Unlike most plants of this family, *I. cairica* is everblooming. The mauve-colored variety is the most popular climber in the Philippines and very rarely seeds, being propagated by cuttings. The plant from which these seeds were obtained is the only one I have seen with white flowers." (Wester.)

47533. FRAGARIA INSULARIS Rydb. Rosaceæ.**Strawberry.**

From Kingston, Jamaica. Presented by Mr. W. Harris. Hope Gardens. Received May 29, 1919.

The "wild strawberry" of Jamaica. Introduced for breeding experiments in developing new varieties of strawberries.

47534 and 47535. PRUNUS spp. Amygdalaceæ.

From Chevy Chase, Md. Collected by Dr. David Fairchild, at his home "In the Woods." Received June 3, 1919. Quoted notes by Dr. Fairchild.

47534. PRUNUS SUBHIRTELLA AUTUMNALIS Makino.

"Seed from a tree of the October blooming Japanese flowering cherry tree imported from the Yokohama Nursery Co., Yokohama, Japan, in 1906. I suggest it as a stock for commercial cherries because of its unusual vigor. Its trunk has been very free from disease, it does not sucker. Its seedlings are not subject to the usual leaf blight (*Cylindrosporium padi*), and its seeds are regularly produced. The flowers are single and are produced both in autumn (October) and spring (about April 1)."

47535. PRUNUS SUBHIRTELLA PENDULA (Sieb.) Tanaka. Rosebud cherry.

"Seed gathered from drooping Japanese cherry trees imported in 1906 from the Yokohama Nursery Co., Yokohama, Japan. The unusual vigor of these drooping cherry trees, the fact that they belong to a long-lived species which in Japan grows to be 300 years old, combined with the facts that the leaves of the seedlings are free from the *Cylindrosporium padi* disease which attacks the Mazzard seedlings, that their trunks are vigorous and are free from disease such as gummosis, and also that the trees bear abundant crops of seeds, would seem to indicate that it is worth testing as a stock for our cultivated cherries, providing it should prove congenial. I have grown seedlings, and find that though uniformly vigorous some have the drooping habit whereas others are upright in growth, agreeing with the prototype which Wilson says occurs wild in the mountains of China and Japan and which he has called variety *ascendens*. No leaf blight has been observed among them. Gathered June 5 or 6, 1919."

47536. XANTHOSOMA sp. Araceæ.**Yautia.**

From Huigra, Ecuador. Corms grown until June, 1919, in the Department of Agriculture greenhouse, from material collected in September, 1918, by Dr. J. N. Rose, associate curator, U. S. National Herbarium.

"(No. 22574.) Found in a semiarid region, among cacti and other dry-land plants on a gravelly hillside, at an altitude of 4,000 feet." (Rose.)

"The corms, which seem to be usually only a few ounces in weight, are edible when cooked. They have a yellow interior, surrounded by a layer about three-sixteenths of an inch thick, of translucent white flesh; this is acrid, and requires longer cooking than the inner part to make it edible. The corms of this yautia should make a satisfactory starchy food in regions where the plant can be grown. The cormels are diminutive at first and appear to grow slowly." (R. A. Young.)

47537. *TRIGONELLA FOENUM-GRÆCUM* L. Fabaceæ. **Fenugreek.**

From Waukegan, Ill. Presented by Blatchford's Calf Meal Factory. Received June 5, 1919.

"*Egyptian fenugreek*, or *helba*, as it is called by the Arabs. This plant yields an important condiment; and its root system is so remarkably provided with tubercles that it is worthy of serious attention as a green-manure crop. The seeds are also of value for feeding purposes, and a large quantity of fodder is produced, which if cut before the seeds ripen is of excellent quality. The condition powders and condiment foods which are sold in England and America extensively and fed to ailing horses, cattle, and chickens, are mixtures of the fenugreek with other meals or grains. It is sometimes planted with berseem." (David Fairchild.)

47538 to 47547.

From Teheran, Persia. Presented by Col. J. N. Merrill, American legation. Received May 5, 1919.

47538. *ALLIUM CEPA* L. Liliaceæ.

Onion.

"Onion seed from Tarum, 25 miles west of Zenjan, in western Persia." (Merrill.)

The following grains are introduced for variety tests being carried on by specialists of the Department of Agriculture.

47539 to 47541. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ. **Barley.**

47539. No. 1.

47541. No. 3.

47540. No. 2.

47542. *SECALE CEREALE* L. Poaceæ.

Rye.

47543 to 47547. *TRITICUM AESTIVUM* L. Poaceæ. (*T. vulgare* Vill.)

Wheat.

47543. No. 1.

47546. No. 4.

47544. No. 2.

47547. No. 5.

47545. No. 3.

47548 to 47550.

From Richmond, Victoria, Australia. Presented by Mr. F. H. Baker. Received June 2, 1919. Quoted notes by Mr. Baker.

47548. *BANKSIA MARGINATA* Cav. Proteaceæ.

"She-oak. Grows along the coast."

This wood is porous, soft, spongy, and light. In the process of drying it twists and warps to a great extent, but when thoroughly seasoned it takes a fine polish and has a pleasing surface. It is used in cabinet-making and for indoor ornamental work. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 383.)

47548 to 47550—Continued.**47549.** *CALLISTEMON RIGIDUS* R. Br. Myrtaceæ.

"Bottle brush."

A shrub, sometimes 30 feet tall, native to New South Wales. The leaves, 2 to 5 inches long, are narrowly linear, and the red flowers, with dark-red stamens an inch long, are borne in large, dense spikes. (Adapted from *Bentham, Flora Australiensis*, vol. 3, p. 121.)

47550. *CALLITRIS CUPRESSIFORMIS* Vent. Pinaceæ.(*Frenela rhomboidea* Endl.)

"Murray pine. Grows in low districts of the mallee."

The timber is strong, durable, and close grained. It is much used for telegraph poles and for building purposes. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 543.)

47551. *BAUHINIA* sp. Cæsalpiniaceæ.

From Cristobal, Canal Zone. Presented by Mr. S. P. Verner. Received. June 2, 1919.

"I have a suspicion that this is the *cacique carey*." (Verner.)

"This name probably refers to a beautifully mottled wood which is used for making walking sticks." (W. E. Safford.)

47552 to 47555. *DAHLIA* spp. Asteraceæ.**Dahlia.**

From Leyden, the Netherlands. Seeds presented by the director of the botanical laboratory, Rijks Universiteit. Received June 2, 1919.

Introduced for experiments being conducted by specialists of the Department of Agriculture in tracing the ancestry of our cultivated dahlias.

47552. *DAHLIA MERCKII* Lehm.**47553 to 47555.** *DAHLIA VARIABILIS* Desf.**47553.** Hybrids.**47555.** Apparently mixed varieties.**47554.** Variety *paeoniaeflora*.**47556 to 47558.** *SACCHARUM OFFICINARUM* L. Poaceæ.**Sugar cane.**

From Porto Rico. Cuttings from Dr. E. W. Brandes, Office of Sugar-Plant Investigations. Received April 25, 1919.

47556. *Rayada*.**47558.** *D17*.**47557.** *D117*.**47559.** *HYMENAEA COURBARIL* L. Cæsalpiniaceæ.**Courbaril.**

From Puerto Cabello, Carabobo, Venezuela. Fruits presented by Mr. J. G. Meyer, American vice consul. Received June 5, 1919.

This important tree flourishes throughout the tropical parts of the Western Hemisphere. The pods contain an edible substance surrounding the seeds, and the wood is fine grained, hard, and heavy. The principal use of the tree is in furnishing South American copal, a gum which exudes from wounds in the bark [and is also said to exude naturally from the roots and lower part of the trunk]. Some of the trees in the Brazilian forest are 6 feet in diameter above the buttresses and are estimated to be more than 1,000 years old. These trees produce large quantities of gum during their lifetime, and the spot in which

one has stood often yields 5 to 10 barrels of the best gum, which is used in the manufacture of varnishes. (Adapted from *Bulletin of the Pan-American Union*, vol. 43, p. 453.)

47560. COLOCASIA ESCULENTA (L.) Schott. Araceæ. Dasheen.

From Port of Spain, Trinidad, British West Indies. Tubers presented by Mr. E. Andre. Received June 5, 1919.

"These dasheens were bought in the Port of Spain ground-provision market; they are a fair sample of what is sold under the name of dasheen, at prices that are subject to a good deal of fluctuation. The price during the last few days has been 3 cents per pound retail, which is also the price of eddoes. All starch foods are high; wheaten flour sets the price.

"Last year I conducted at the Dabadie Nurseries a pretty exhaustive set of experiments in the growing of dasheens and Chinese eddoes. I may say that only here and there, in some particularly favored patch close to the river bank, did an occasional dasheen give anything like a respectable tuber; the poor clay at Dabadie did not suit them. It was otherwise with the Chinese eddoes which did remarkably well with but little care. The dasheen requires well-watered, low-lying land for remunerative crops." (*Andre.*)

"The buds, or shoots, from the corms and cormels of this dasheen are white or greenish white, while those from the one heretofore grown by the United States Department of Agriculture as the Trinidad dasheen have pink shoots. The quality of the tested specimen of this new variety was good." (*R. A. Young.*)

47561. KOKIA ROCKII KAUAIENSIS Rock. Malvaceæ. Kokio.

From Honolulu, Hawaii. Presented by Mr. J. F. Rock. Received June 10, 1919.

"Seeds of a new variety of *Kokia rockii*, from the island of Kauai, discovered by Mr. A. Knudsen. There is only one specimen of the tree; it grows in the very dry region of Kauai, several miles from Mana, in Koaloha canyon, on the edge of a cliff, which saved it from destruction by cattle. I think the discovery of this form is one of the most noteworthy since the days of Hillebrand." (*Rock.*)

47562 and 47563. CARICA PAPAYA L. Papayaceæ. Papaya.

From Merida, Yucatan, Mexico. Presented by Mr. G. O. Totten, Washington, D. C. Received June 10, 1919. Quoted notes by Mr. Totten.

47562. "Seeds of a medium-sized papaya which grows only about 12 feet high and bears fruits of the finest flavor of any we ever tasted. They were brought to Merida from Campeche, Yucatan."

47563. "Seeds given to me by Mr. E. H. Thompson, former consul at Merida, who declared they were from a variety of very fine quality."

47564. DIOSCOREA LATIFOLIA Benth. Dioscoreaceæ. Acom.

From Bahia, Brazil. Tubers presented by Sr. V. A. Argollo Ferrão. Received June 11, 1919.

"*Inhame figado de piru* [turkey-liver yam] or *caissara*. This very interesting inhame is cultivated here in some localities, but is rare and is not found in the markets. The tubercles are borne on the vine. I had a few last year and planted them in December, when they were starting. I am now (April 28) picking the crop. Those I have eaten were boiled, and I found them very good. I think it is a plant worth propagating, for it gives an excellent substi-

tute for the potato, is productive, and the tubercles keep for several months without deterioration." (*Argollo Ferrão*.)

"Aerial tubers constitute the crop of this yam. The angular form of the tuber suggests the name 'turkey liver.' The flesh is of a yellowish color and very firm when cooked. The tubers are eaten boiled, fried, or baked. The flavor is mild, and there is just a suggestion of sharpness in the taste, which is in its favor." (*R. A. Young*.)

For an illustration of these aerial tubers, see Plate II.

47565. CASIMIROA EDULIS La Llave. Rutaceæ. White sapote.

Plants growing at the Plant-Introduction Field Station, Miami, Fla. Numbered June 27, 1919, for convenience in recording distribution.

"A productive, large-fruited variety which originated at the Miami garden. The fruits are oval to round, yellow-green, and sometimes nearly 4 inches in length. The flesh is cream colored, smooth, and sweet, with a trace of bitterness." (*Wilson Popenoe*.)

47566. TABERNAEMONTANA sp. Apocynaceæ.

From Guinea Grass, British Honduras. Presented by Mr. D. Masson. Received June 4, 1919.

"A sample of chicle and seeds from the same tree which in Central America is called *courgeton*." (*Masson*.)

47567. PRUNUS SERRULATA Lindl. Amygdalaceæ.

Flowering cherry.

From Chevy Chase, Md. Collected by Dr. David Fairchild, at his home "In the Woods." Received June 8, 1919.

"*Daizen*. Seeds from a tree at the southeast corner of my study. This tree, in fact all the *daizen* trees on my place, have characterized themselves by their regular fruiting habit, the cherry fragrance of their single white flowers, and the vigor of their trunks and freedom from suckers. These trees have been particularly free from disease and have struck me as promising for stock purposes. They were bought originally from the Yokohama Nursery Co., Yokohama, Japan, in the spring of 1906, and are now 13 years old and 20 feet or so high, with trunks about 6 inches in diameter.

"It is possible, of course, that the plants from these seeds will show the result of crossing with other varieties, such as *Murasaki* and *Jobeni* and *Naden*, with which they are closely planted. These varietal names are the ones attached to the trees when they were sent by the Yokohama Nursery Co." (*Fairchild*.)

47568. DOLICHOS LABLAB L. Fabaceæ.

Bonavist bean.

From St. Vincent, British West Indies. Presented by Prof. S. C. Harland, assistant for cotton research, Agricultural Experiment Station. Received June 11, 1919.

"*St. Vincent Bush*. I discovered this type of bean in a peasant holding in St. Vincent in the spring of 1915 and found that it bred true when put into pedigree culture. Under cultivation it produces a wiry bush from 18 inches to 2 feet in height, and bears a heavy crop when environmental conditions are favorable. As a cover crop for orchards in Florida I think it is worth a trial.

"With me the plants of the bush *Dolichos* always flower when 5 weeks old and ripe pods are produced at 8 weeks. Often a second crop of pods is produced. The beans are quite palatable, though they are inferior to Lima beans.

"I should mention that in the course of my inheritance studies on *Dolichos*, I have established that the bush form behaves as a simple Mendelian recessive to the climbing form. In a cross between *St. Vincent Bush* (white) and *Purple Soudan* climber, I have isolated pure bush types of varying vegetative habits. Some are much more vigorous than the original bush parent. I have also succeeded in isolating a bush form of *Vilmorin's Stringless* by crossing *Stringless* with the native bush." (*Harland*.)

47569. *STIZOLOBIUM BRACTEATUM* (DC.) Kuntze. Fabaceæ.

From Namkham, Burma, India. Presented by Mr. Robert Harper. Received June 21, 1919.

Introduced for experiments being carried on with various forms of velvet beans.

47570 to 47575.

From Auckland, New Zealand. Presented by Mr. James W. Poynton. Received June 12, 1919. Quoted notes by Mr. Poynton.

47570. *MERYTA SINCLAIRII* (Hook. f.) Seem. Araliaceæ.

"Native name *puka*. The *Meryta* has large leaves, and is rather a striking-looking small tree much grown in gardens for ornament. For a time it was believed the rarest tree in the world, only one plant being known. One of our early botanists saw a tree near a large native camp, but the Maoris declared it was taboo and forbade him under penalty of death to touch it. He reported its discovery and described it as accurately as he could. No other naturalist had ever seen such a tree in New Zealand, and much interest was aroused by his report. Twelve years afterward he returned to the place and found the camp deserted; but the tree was still there. He got some leaves and flowers and sent them to the eminent botanist, Sinclair, who classified it, and it is now named after him. Subsequently 27 plants were found on some islands in the Hawaki Gulf near Auckland, and from them seeds were obtained for distribution. The plants are male and female."

47571. *METROSIDEROS TOMENTOSA* A. Rich. Myrtaceæ.

"The Christmas tree of our early settlers; native name *pohutukawa*. It comes into bloom mostly during Christmas week (midsummer here). The flowers are deep red, and the tree is very pretty when in flower. It grows well by the seaside, gives good shelter, and endures salt spray splendidly. The wood is hard and durable, but the tree does not grow straight, being bent at the branches. For this reason it was much sought after for knees for boat building."

47572. *PHORMIUM TENAX* Forst. Liliaceæ. New Zealand flax.

"I gathered the flax seed myself from some strong, well-fibered plants growing in the Court House grounds at Hamilton in the Auckland Province of New Zealand. I can therefore warrant it to be of good pedigree and freshly gathered."

47573. *PHYLLOCLADUS TRICHOMANOIDES* D. Don. Taxaceæ.

"Cones of the remarkable 'celery-topped pine,' native name *tanekaha*. The bark contains two valuable red dyes and about 22 per cent of tannin.

47570 to 47575—Continued.

When about 18 months old the leaves become aborted and the leafstalks expand, become leaflike, and take on all the functions of leaves. Some of the acacias do this; but this, I believe, is the only pine with this habit."

47574 and 47575. VERONICA spp. Scrophulariaceæ.

"The veronicas in New Zealand are the most numerous of special plants. We have about 550 species of plants, and of these the veronicas number over 100. In the northern hemisphere they are merely herbs; some species here attain the dignity of trees, being 30 feet high and as thick as a man's body; most of them are shrubs."

47574. VERONICA sp.

"This one is a large-leaved shrub with purple flowers."

47575. VERONICA sp.

"This species is a smaller leaved shrub with light-blue flowers."

47576. MEIBOMIA LEOCARPA (Spreng.) Kuntze. Fabaceæ.

(*Desmodium leiocarpum* Don.)

From Santiago de las Vegas, Cuba. Cuttings presented by Dr. M. Calvino, director, Agricultural Experiment Station. Received June 14, 1919.

"This plant was introduced by me from Brazil and has shown itself to be a very good legume fodder for Cuba. I am now experimenting to see if it can be propagated by cuttings." (*Calvino.*)

47577. CROCUS SATIVUS L. Iridaceæ.

Saffron.

From Valencia, Spain. Bulbs presented by Mr. J. R. Putnam, American consul. Received June 16, 1919.

A light-purple autumn-flowering crocus native to southern Europe. Commercial saffron consists of the deep orange-colored stigmas of the flowers gathered with part of the style and carefully dried. A grain of good saffron contains the stigmas and styles of 9 flowers, and over 4,000 flowers are required to yield an ounce of saffron. The principal use is to furnish an orange-red dye. (Adapted from *Lindley, Treasury of Botany, vol. 1, p. 349.*)

47578 and 47579.

From Miami, Fla. Plants grown at the Plant-Introduction Field Station at Miami. Numbered for convenience in recording distribution in June, 1919.

47578. JUBAEA CHILENSIS (Molina) Baill. Phœnicaceæ.

Palm.

(*J. spectabilis* H. B. K.)

"This is the palm from which the palm honey of Chile is made. This sirup is the most delicious I have ever tasted. It is superior, in my estimation, to maple sirup, being milder and not cloying the palate as the latter does. In 40 years the trees will be ready to tap for the sap from which this sirup is made. It is a very ornamental palm but a slow grower. It thrives on very dry, poor soils, and requires very little water. Hitherto palms have been felled, but they can be tapped, I am assured, just as maple trees are tapped." (*David Fairchild.*)

47578 and 47579—Continued.**47579. PUERARIA THUNBERGIANA** (Sieb. and Zucc.) Benth. Fabaceæ.**Kudzu.**

"The kudzu vine is a large-leaved, rapid-growing legume, native to Japan. It succeeds well in nearly all sections of the United States. It is an excellent vine for arbors or wherever a quick cover is required. It furnishes an abundant and nutritious forage, and is of value for planting on rocky land or hillsides where cultivation is difficult. The roots produce starch of good quality." (*J. H. Johnson.*)

In moist, rich woodland it becomes a troublesome weed.

47580 to 47583.

Plants grown at the Plant-Introduction Field Station, Brooksville, Fla. Numbered for convenience in recording distribution in June, 1919.

47580. ACACIA LONGIFOLIA (Andrews) Willd. Mimosaceæ.

A bushy acacia, useful for binding coast sands since the lower branches root very readily and spread quickly. The bark, while not so high in tannin as that of *Acacia mollissima*, is used chiefly in tanning sheep skins. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 7.*)

47581. HYPERICUM CANARIENSE L. Hypericaceæ. **St.-John's-wort.**

"A species native to the Canary Islands. It forms a shrub up to 15 feet in height. The leaves are oblong lance shaped, narrowed at the base, and 2 to 3 inches long. The flowers, produced in panicles, are 1 to 1½ inches across. Similar to *Hypericum floribundum*." (*J. H. Johnson.*)

47582. BULBINE LONGISCAPA (Jacq.) Willd. Liliaceæ.

"A stemless, liliaceous perennial with a small tuberous rootstock—allied to *Anthericum*. The leaves are fleshy and very glaucous, 8 to 12 inches in length. The flower spike is a foot or more long, and the flowers are bright yellow, one-third of an inch long, the perianth segments reflexing when fully expanded. The capsule is the size of a pea. The plant is native to South Africa." (*J. H. Johnson.*)

47583. AGAVE VERSCHAFFELTII Lem. Amaryllidaceæ.

A variable species from southern Mexico, many named varieties being in cultivation. The leaves are 3 inches wide by 6 to 8 inches long, glaucous, tipped with red-brown spines and armed with long, rusty teeth on large, fleshy prominences. The inflorescence is rather sparse. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 233.*)

47584 to 47592.

From Colombia. Collected by Mr. Alfred Lenz, Flushing, Long Island. Received June 16, 1919. Quoted notes by Wilson Popenoe.

47584. ACHRAS ZAPOTA L. Sapotaceæ.**Sapodilla.**

"The sapodilla or chicozapote is the best of the sapotaceous fruits. It is common in many parts of tropical America (found wild in several regions) and is cultivated successfully in southern Florida, where it merits commercial exploitation. The fruits, which are picked when still hard, can be shipped to distant markets. Choice varieties should be propagated by budding."

47584 to 47592—Continued.**47585. ANNONA SQUAMOSA L. Annonaceæ.****Sugar-apple.**

"One of the best of the anonas. It succeeds only in regions where there is little frost. It does well in southern Florida, but has never been successfully grown in California. New varieties should be tested to obtain superior ones combining productiveness with good size and quality of fruit."

47586. CARICA PAPAYA L. Papayaceæ.**Papaya.**

"The papaya succeeds admirably in southern Florida. The greatest difficulty which has been encountered thus far is the perishable nature of the fruit. This variety may aid in the production of varieties with better shipping qualities."

47587. CARYOCAR sp. Caryocaraceæ.

"This genus yields the souari nut, sometimes exported from South America to Europe. There are several species which produce edible nuts. Probably the only section of the United States in which they can be planted with reasonable hopes of success is extreme southern Florida."

47588. CROTALABIA sp. Fabaceæ.

A legume which may have possibilities as a green-manure or as a cover crop.

47589. MIRABILIS JALAPA L. Nyctaginaceæ.

Seeds of this herbaceous perennial with fragrant red, white, yellow, and variegated flowers are always interesting to grow in the search for new varieties.

47590. PHASEOLUS COCCINEUS L. Fabaceæ.**Scarlet Runner bean.**

A rather small variety having light-brown seeds with dark-brown markings.

47591. PHASEOLUS VULGARIS L. Fabaceæ.**Common bean.**

Small tan-colored beans with dark-brown markings.

47592. ZEA MAYS L. Poaceæ.**Corn.**

Ears of a small variety having flat, flinty kernels resembling pop corn.

47593. OCHROMA LAGOPUS Swartz. Bombacaceæ. Balsa wood.

From Santiago de las Vegas, Cuba. Presented by Dr. M. Calvino, director, Agricultural Experiment Station. Received June 24, 1919.

A wild tree, rather abundant, growing about 40 feet high and a foot or more in diameter. The wood is white, stained with red, luminous, and sometimes silky in aspect. It is very porous, the lightest of all woods, lighter even than true cork. In Trinidad and other places it forms an article of commerce with fishermen who use it in place of cork on their nets. (Adapted from *Cook and Collins, Economic Plants of Porto Rico, p. 205.*)

"In the past ten years this wood has sprung into prominence as an insulating material and for use in life rafts. Refrigerators, the thick walls of which are made of this wood, have kept ice for two weeks; refrigerator cars of unusual lightness and extraordinary insulating qualities are now being made of it, and a motor boat has been made nonsinkable by using it to fill the air spaces in its hull. Plantations of Balsa trees are even now being made in Central America under the stimulus of a large commercial company." (*David Fairchild.*)

47594. CASSIA sp. Caesalpiniaceæ.

Plants growing at the Yarrow Plant-Introduction Field Station, Rockville, Md. Numbered in June, 1919, for convenience in recording distribution.

Grown from seeds received from Dr. A. Robertson Proschowsky, Nice, France, under the name *Cassia arborescens*.

47595 and 47596.

From Kabul, Afghanistan. Presented by Mr. A. C. Jewett, Fresno, Calif. Received June 18, 1919. Quoted notes by Mr. Jewett.

47595. BRASSICA sp. Brassicaceæ.

"A vegetable much like a turnip but which grows above the ground like a cabbage."

47596. CUCUMIS MELO L. Cucurbitaceæ.**Muskmelon.**

"This melon grows about a foot long and 7 inches in diameter. It is a late melon, ripening in September, and keeps for some time; I have had them at Christmas time. The meat is firmer than that of most muskmelons, is not very yellow, and is of good flavor."

47597. TRIFOLIUM PANORMITANUM Presl. Fabaceæ.**Palermo clover.**

From Algiers, Algeria. Presented by Dr. L. Trabut. Received June 19, 1919.

"A clover closely resembling *Trifolium alexandrinum*, which grows vigorously in damp places along the coast. It is easily distinguished by its dark-green color and its larger leaves. This clover makes a good forage, but does not as yet lend itself readily to cultivation. Hybridization experiments with berseem are being carried on. This Palermo clover shows local variations which should be studied." (Trabut.)

47598 to 47601. ZEA MAYS L. Poaceæ.**Corn.**

From Insein, Southern Circle, Burma, India. Presented by Mr. A. McKerral, deputy director of agriculture. Received June 23, 1919.

"Different kinds of maize grown by the Chins." (McKerral.)

47598. Nim-Tlorr.**47600. Nim-Doom.****47599. Nim-Pe.****47601. Nim-Leng.****47602. SOLANUM MELONGENA L. Solanaceæ.****Eggplant.**

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received June 24, 1919.

"An eggplant said to be of very good quality; it is a cross between the American and the native long slender variety." (Wester.)

47603 to 47616. BRASSICA OLERACEA BOTRYTIS L. Brassicaceæ.**Broccoli.**

From Reading, England. Purchased from Sutton & Sons. Received June 25, 1919.

These seeds have been introduced for specialists in the department who are studying the disease resistance of the several varieties.

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|---|-------------------------------------|
| 47603. <i>Autumn Protecting.</i> | 47610. <i>Safeguard Protecting.</i> |
| 47604. <i>Bouquet.</i> | 47611. <i>Satisfaction.</i> |
| 47605. <i>Improved White Sprouting.</i> | 47612. <i>Snow-White.</i> |
| 47606. <i>Late Queen.</i> | 47613. <i>Standwell.</i> |
| 47607. <i>Michaelmas White.</i> | 47614. <i>Superb Early White.</i> |
| 47608. <i>Purple Sprouting.</i> | 47615. <i>Vanguard.</i> |
| 47609. <i>Reading Giant.</i> | 47616. <i>Whitsuntide.</i> |

47617. COIX LACRYMA-JOBI L. Poaceæ. Job's-tears.

From Rio de Janeiro, Brazil. Presented by Mr. T. R. Day, through Mr. Augustus I. Hasskarl, vice consul, Rio de Janeiro. Received June 23, 1919.

"*Lgrimas de Nossa Senhora* (Tears of Our Lady). I found this plant growing in a natural state in Brazil, and have had it under experiment for about three years at one of the Leopoldina Railway Co.'s experiment stations. It is a very vigorous grower and produces under almost any conditions here great crops of excellent forage. It reaches a height of 10 feet or over, and a single plant often produces 40 to 50 shoots. The yield in green forage under favorable conditions runs very high, from 10 to even 20 tons to the acre, and the yield of grain is also very heavy. The seeds are very hard and require crushing or grinding before feeding, if allowed to mature. But I am of the opinion that the best results may be obtained from the use of the plant for soiling, cutting four or five times during the year.

"The plant stools well, continually sending up new shoots or stems, thereby renewing itself, and lasting here for some years. In temperate climates it would be an annual, as is the case with teosinte and maize. Its favorite habitat is a low, moist, or even marshy soil, but it will grow successfully in dry soils also. I have seen it growing luxuriantly in very wet localities, even in water." (Day.)

47618. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received June 23, 1919.

"The *sitao*, a climbing vine with long, slender pods that may be eaten as string beans and are very good when picked tender." (Wester.)

47619 and 47620.

From Los Banos, Philippine Islands. Presented by Prof. C. F. Baker, dean, College of Agriculture, University of the Philippines. Received June 24, 1919. Quoted notes by Prof. Baker.

47619. ARECA IPOT Beccari. Phœnicaceæ. Palm.

"An ornamental palm, about 20 feet high; collected by M. Villaraza, in March, 1919, from cultivated plants at Majayjay, Province of Laguna. Local name, *bunga*."

47620. PYGEUM PRESII Merr. Amygdalaceæ.

"A tree about 50 feet in height; collected by Nem. Catalan, March 26, 1919, from trees growing on the college farm. Local name, *lago*. Used for lumber."

47621 and 47622. ORYZA SATIVA L. Poaceæ.**Rice.**

From Cienaga, Magdalena, Colombia. Presented by Mr. A. Palacio. Received June 25, 1919.

Introduced for the use of Department specialists studying different varieties of rice.

47621. Canilla.**47622. Criollo.****47623. ACTINIDIA KOLOMIKTA (Maxim.) Rupr. Dilleniaceæ.**

Grown at the Yarrow Plant-Introduction Field Station, Rockville, Md., and numbered in June, 1919, for convenience in distribution.

"A large-growing, deciduous, ornamental climber, native to Amur, China, and Japan. The flowers are one-half to five-eighths of an inch in diameter, white with purple stamens, and are produced in abundance. The fruit is the size of a gooseberry or small plum, and has somewhat the flavor of the former. The foliage is deep green, tinted with red, and is very ornamental." (*J. H. Johnson.*)

47624. CASIMIROA EDULIS La Llave. Rutaceæ. White sapote.

Plants growing at the Plant-Introduction Field Station, Chico, Calif. Numbered in June, 1919, for convenience in recording distribution.

Grown from seed collected by Mr. G. P. Rixford on the William A. Spinks place, Duarte, Calif.

47625 to 47628. ZEA MAYS L. Poaceæ.**Corn.**

From Kirin, China. Presented by Mr. Joseph Bailie. Received June 30, 1919.

"Corn from four separate ears. They may be all the same variety, but the ears looked different." (*Bailie.*)

47625. No. 1.**47627. No. 3.****47626. No. 2.****47628. No. 4.****47629 to 47830.**

From Darjiling, Bengal, India. A collection of seeds presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden. Received May 1, 1919.

47629. ACER CAMPBELLII Hook. f. and Thoms. Aceraceæ.**Maple.**

This is the principal maple of the northeastern Himalayas, where it grows at an altitude of 7,000 feet and more. The leaves are a beautiful green with red petioles. The grayish white close-grained wood is moderately hard and is extensively used for planking and for tea boxes. The tree reproduces freely by seed or by coppice and plays an important part in the regeneration of the hill forests. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 69.*)

47630. ACER HOOKERI Miquel. Aceraceæ.**Maple.**

A tree about 45 feet in height, with undivided heart-shaped leaves; native to Sikkim, India, where it grows at altitudes of 8,000 to 10,000 feet. The wood is gray, and weighs 37 pounds to the cubic foot. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 69*, and *Hooker, Flora of British India, vol. 1, p. 694.*)

47631. ACER LAEVIGATUM Wall. Aceraceæ.**Maple.**

A handsome tree with a broad, oval crown, native to the Himalayas from the Jumna eastward to Bhutan. The leaves are undivided and

47629 to 47830—Continued.

green on both surfaces. The wood is white, shining, hard, and close grained. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 70.*)

47632. ACER THOMSONI Miquel. Aceraceæ.

Maple.

A large tree, often 150 feet in height, found in the hills of Sikkim and Bhutan, India, at an altitude of 4,000 feet. The thick, coarse, 3-lobed leaves are a foot or more in length, and the wood is grayish white, soft, and very brittle. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 71.*)

47633. ACTINIDIA STRIGOSA Hook. f. and Thoms. Dilleniaceæ.

A shrubby climber, native to Sikkim, India, with white flowers in axillary cymes and edible, ovoid, mucilaginous fruits a little more than an inch in length. (Adapted from *Hooker, Flora of British India, vol. 1, p. 286.*)

47634. TRICHOSPORUM BRACTEATUM (Wall.) Kuntze. Gesneriaceæ.
(*Aeschynanthus bracteata* Wall.)

An epiphytic shrubby plant, native to the temperate regions of the Himalayas at altitudes of 2,000 to 8,000 feet. The narrow, fleshy leaves are about 4 inches in length and the scarlet flowers are over an inch long. (Adapted from *Hooker, Flora of British India, vol. 4, p. 342.*)

47635. ALNUS NEPALENSIS D. Don. Betulaceæ.

Alder.

A tall, sparsely branched, deciduous tree with dark-green bark which becomes brown and fissured with age. The bark is used in tanning and dyeing and is said to enter into the composition of native red inks. The wood is soft, close, and even grained, and is used for tea boxes. The tree grows rapidly, and in Nepal, where it is native, it thrives on the damp, uncultivable banks of rocky streams and river beds. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 176.*)

47636. ALPINIA ALLUGHAS (Retz.) Roscoe. Zinziberaceæ.

A common plant in low, moist places in eastern India. It has polished, lanceolate leaves and large, numerous flowers of a beautiful rose color. The aromatic rhizomes are used by the Indians medicinally. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 192*, and *Firminger, Manual of Gardening for India, p. 357.*)

47637. AMERIMNON SISSOO (Roxb.) Kuntze. Fabaceæ.

(Dalbergia sissoo Roxb.)

"The timber is very valuable and is one of the numerous kinds which are known in the timber trade as rosewood. The heartwood is brownish, and it possesses great strength and elasticity. It is also heavy, its weight being about 50 pounds to the cubic foot. The wood is used for all kinds of joinery and cabinetwork, carving, building material, gun carriages, etc. It requires a tropical or subtropical temperature." (*Gardeners' Chronicle, 3d ser., vol. 55, p. 82.*)

47638. ANEMONE RIVULARIS Buch.-Ham. Ranunculaceæ.

A woody ornamental plant from 1 to 3 feet in height, with the 3-parted basal leaves up to 6 inches in diameter, and white or bluish flowers, 1 to 1½ inches long, in compound cymes. It is a native of temperate regions in India and Ceylon above 5,000 feet altitude. (Adapted from *Hooker, Flora of British India, vol. 1, p. 9.*)

47629 to 47830—Continued.

47639. ANEMONE VITIFOLIA Buch.-Ham. Ranunculaceæ.

This Himalayan plant resembles in many respects the well-known Japanese anemone. The woolly foliage, however, is thicker and larger. The large flowers are pure white and are produced very freely during the summer months. This plant is not quite so hardy as its Japanese relative. (Adapted from *The Gardeners' Chronicle*, 3d ser., vol. 61, p. 88.)

47640. ARDISIA INVOLUCRATA Kurz. Myrsinaceæ.

A pink-flowered, evergreen shrub, 3 to 6 feet high, native to Sikkim, India. The globose berries are one-fourth of an inch in diameter. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 528.)

47641. ARUNDINELLA HISPIDA (Humb. and Bonpl.) Kuntze. Poaceæ.

(*A. brasiliensis* Raddi.)

Grass.

A perennial grass with a stout, hard, creeping rootstock, and with a simple or branched stem from 1 to 5 feet in length. The leaves are from 6 to 12 inches long, and the panicles are 4 to 18 inches in length. This is an abundant grass throughout the hilly parts of India, and is distributed through the East Indies, South Africa, Australia, and tropical America. In Sao Paulo, Brazil, it is considered a good forage plant for dry lands. (Adapted from *Correa, Flora do Brazil*, p. 128, and *Hooker, Flora of British India*, vol. 7, p. 73.)

47642. ASTER HIMALAICUS C. B. Clarke. Asteraceæ.

Aster.

A small, robust Himalayan aster with rather hairy, leafy, ascending stems and solitary flower heads about 1½ inches in diameter. The 40 to 50 ligules are very narrow. In Sikkim, India, this aster is found at altitudes of 13,000 to 15,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 250.)

47643. ASTILBE RIVULARIS Buch.-Ham. Saxifragaceæ.

An erect, herbaceous plant with a perennial creeping rootstock, alternate compound leaves, and terminal panicles of small greenish flowers. It is very common in the temperate portions of the Indian Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 389.)

47644. BEGONIA AMOENA Wall. Begoniaceæ.

Begonia.

A stemless or short-stemmed tuberous-rooted plant, native to the temperate regions of the central and western Himalayas, with ovate or oblong acuminate leaves about 3 inches long. The few-flowered scape is from 3 to 6 inches in height. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 642.)

47645. BERBERIS INSIGNIS Hook. f. and Thoms. Berberidaceæ. **Barberry.**

"This magnificent species forms a large bush, with deep-green leaves 7 inches long and bunches of yellow flowers." (*Hooker, Himalayan Journals*, vol. 1, p. 340.)

47646. BERBERIS NAPAULENSIS (DC.) Spreng. Berberidaceæ. **Barberry.**

A shrub or small tree, common in eastern India at altitudes above 5,000 feet. The wood is bright yellow and hard, is used to a small extent by the natives as a yellow dye, and because of its handsome color might be useful for inlaying. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 1, p. 446.)

47629 to 47830—Continued.

47647. *BETULA UTILIS* D. Don. Betulaceæ.

Birch.

A moderate-sized tree, 40 to 50 feet in height, with smooth shining whitish bark and irregularly serrate leaves. The tough hard wood is pinkish white and even grained. (Adapted from *Kirtikar, Indian Medicinal Plants*, pt. 2, p. 1213.)

47648. *BRASSAIOPSIS SPECIOSA* Dec. and Planch. Araliaceæ.

A small tree with the upper parts of the branches prickly and with digitate leaves. The panicle is large, sometimes more than a foot long. The tree is a native of Nepal, Assam, and Burma, India. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 737.)

47649. *BUCKLANDIA POPULNEA* R. Br. Hamamelidaceæ.

A large evergreen tree, up to 80 feet in height, native to the eastern Himalayas at altitudes of 3,000 to 8,000 feet. The wood is grayish brown, close grained, and durable, and is very much used in Darjiling for planking and for doors and window frames. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 1, p. 545.)

47650. *BUDDLEIA ASIATICA* Lour. Loganiaceæ.

A graceful, large shrub or small tree, common through India and the Malay Peninsula, ascending to 6,000 feet in the Nilghiri Hills. The lanceolate leaves are 4 to 8 inches long, and the small, white, sweet-scented flowers are borne in long, slender, spikelike racemes. This plant flowers continuously for three months in India. (Adapted from *Curtis's Botanical Magazine*, pl. 6323.)

47651. *CALLICARPA RUBELLA* Lindl. Verbenaceæ.

A small Chinese shrub, about 2 feet in height, entirely covered with short hairs. The flat, yellowish green leaves are 4 to 5 inches long, with strong dentations and cordate bases. The small pink flowers are borne in many-flowered cymes. (Adapted from *Botanical Register*, vol. 11, p. 883.)

47652. *CALLICARPA VESTITA* Wall. Verbenaceæ.

A medium-sized tree, often 30 feet high, with a thick trunk and ovate, acute leaves with silky white lower surfaces, 4 to 10 inches long. The lavender flowers are in axillary cymes. It is a native of Nepal and Sikkim, India, where it ascends to 4,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 567.)

47653. *CAPPARIS OLACIFOLIA* Hook. f. and Thoms. Capparidaceæ.

An erect thorny shrub, 6 to 8 feet tall, with shining leaves and large, axillary flowers, white, with blue anthers. The shrub is found in the tropical valleys of the Himalayas from Nepal to Assam. The wood is white and hard, and weighs about 44 pounds to the cubic foot. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 2, p. 132, and *Hooker, Flora of British India*, vol. 1, p. 178.)

47654. *CASSIA LAEVIGATA* Willd. Cæsalpiniaceæ.

Canudo de pito.

A tropical American ornamental shrub with panicles of whitish yellow flowers. The reedlike branches are used in Brazil for making smoking pipes. (Adapted from *Rodrigues, Hortus Fluminensis*, p. 146.)

47655. *CASSIA TORA* L. Cæsalpiniaceæ.

An annual shrub, common throughout the Tropics, the seeds of which have been recently used as an adulterant for coffee in Bombay, India.

47629 to 47830—Continued.

The aroma of the ground seeds is not unpleasant. The chemical analysis does not show any ingredients which are known to be harmful. (Adapted from *Poona Agricultural College Magazine*, vol. 9, p. 47.)

47656. CAUTLEYA LUTEA Royle. Zinziberaceæ.
(*Roscoeia elatior* Smith.)

A slender herbaceous plant, native to the temperate regions of the Himalayas, 12 to 18 inches in height, with narrow, sessile leaves and loose spikes of yellow flowers with red calyces. The globose capsules are bright red. (Adapted from *Hooker, Flora of British India*, vol. 6, p. 208.)

47657. CELASTRUS PANICULATUS Willd. Celastraceæ. **Bittersweet.**

A climbing shrub of the Himalayan foothills, ascending to 4,000 feet. The seeds yield a deep-scarlet or yellow oil used medicinally as an external application. When subjected to destructive distillation, the seeds yield the oleum nigrum, an empyreumatic black oily fluid formerly employed in the treatment of beriberi. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 2, p. 237.)

47658. CENTRANTHERA GRANDIFLORA Benth. Scrophulariaceæ.

A stiff, rough, yellow-flowered annual with narrow, rigid, sessile leaves about 2 inches long. The plant reaches a height of a foot or two and is a native of Sikkim, India. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 301.)

47659. CLEMATIS GOURIANA Roxb. Ranunculaceæ. **Clematis.**

An extensive climber, found in the hilly districts of the western Himalayas and south to Ceylon, ascending to 3,000 feet. The leaves and stems abound in an acrid, poisonous principle which, when applied to the skin, causes vesication. The very small yellowish or greenish white flowers grow in dense panicles. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 2, p. 369, and *Hooker, Flora of British India*, vol. 1, p. 4.)

47660. CLERODENDRUM INDICUM (L.) Druce. Verbenaceæ.
(*Clerodendron siphonanthus* R. Br.)

A large shrub with hollow herbaceous branches and whorls of 3 to 5 narrow leaves 6 to 9 inches long. The flowers, borne in loose terminal thyrsi, are white when first opening, gradually changing into cream color, and the calyces are red. The blue ovoid berries are supported by the enlarged, spreading calyces. This shrub is native to southeastern and southern India, where the roots and leaves are used by the natives medicinally. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 2, p. 375, and *Brandis, Forest Flora of India*, p. 364.)

47661. COFFEA BENGALENSIS Roxb. Rubiaceæ.

This shrub, which is a close relative of the plant which furnishes the coffee of commerce, is a native of India and is remarkable for the number and beauty of its flowers. These flowers, which are large and white, are borne singly or in pairs at the ends of the branches. (Adapted from *Curtis's Botanical Magazine*, pl. 4917.)

47662. COMMELINA OBLIQUA Buch.-Ham. Commelinaceæ.

A tall, branched herb, common throughout the low moist regions of India, where the blue flowers appear chiefly during the rainy season.

47629 to 47830—Continued.

The root is said to be edible, and during times of scarcity the leaves and stems are used as greens. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 2, p. 516, and *Hooker, Flora of British India*, vol. 6, p. 372.)

47663. *COTONEASTER ACUMINATA* Lindl. Malaceæ.

A deciduous shrub, native to the Himalayas of eastern India at altitudes of 4,500 to 10,000 feet. The white flowers are borne in compact cymes, and the hard white wood is used for making walking sticks. (Adapted from *Brandis, Forest Flora of India*, p. 209.)

47664. *COTONEASTER FRIGIDA* Wall. Malaceæ.

"Of the stronger growing *Cotoneasters* this is perhaps the best, for it grows into a very large bush, or sometimes a small tree, and rarely fails to fruit freely, the branches from and after late September being laden with large clusters of bright-red fruits. Moreover, it is more attractive when in flower than many of the *Cotoneasters*, the flowers being creamy white and produced in large heads. Although a deciduous species, the leaves are often retained until well into winter, and after a mild autumn it not infrequently happens that many leaves are left until January. The fruit also remains until well into the New Year if not troubled by birds. It is a Himalayan plant, and succeeds in a light and sunny position in good loamy soil." (*The Garden*, vol. 80, p. 555.)

47665. *COTONEASTER ROTUNDIFOLIA* Wall. Malaceæ.

One desirable feature of this *Cotoneaster* used as an ornamental plant is that the berries are less attractive to birds than those of any of the other kinds. This is a very important point, as some members of the genus are very quickly robbed of their beauty after the berries color. *Cotoneaster rotundifolia* is one of the Himalayan species, several of which run into each other by almost imperceptible gradations, so that, as might be expected, a certain amount of confusion attends their nomenclature. The true *Cotoneaster rotundifolia* is a beautiful shrub, usually forming a rather spreading bush 4 or 5 feet in height, clothed with small dark-green roundish leaves, many of which are retained throughout the winter unless the weather is particularly severe. The berries, which are about the size of peas, are very freely borne and of a deep-scarlet hue when ripe. (Adapted from *Journal of Horticulture and Home Farmer*, 3d ser., vol. 67, p. 599.)

47666. *CRACCA CANDIDA* (DC.) Kuntze. Fabaceæ.
(*Tephrosia candida* DC.)

A large shrub, native to Burma and Bengal, with hairy leaflets and pods, and white flowers, about an inch long, in terminal racemes. The leaves are used to poison fish. (Adapted from *Brandis, Forest Flora of India*, p. 138.)

47667. *CBOTALARIA ALATA* Buch.-Ham. Fabaceæ.

A suberect perennial undershrub, 1 to 2 feet high, with the stem and lower foliage covered with short silky pubescence. The pale-yellow flowers are borne in 2 to 3 flowered racemes. This shrub is a native of eastern India, where it ascends to 5,500 feet in the Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 69.)

47629 to 47830—Continued.

47668. CROTALARIA TETRAGONA Roxb. Fabaceæ.

A stiff, very handsome shrub, often 6 to 8 feet in height, native to the lower altitudes of the Himalayas from Kumaon to Assam, India. The slender, silky branches and the long racemes of lemon-yellow flowers make this a very attractive shrub. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 78.)

47669. CRYPTOLEPIS ELEGANS Wall. Asclepiadaceæ.

A slender, yellow-flowered climber, with oblong or linear-oblong leaves up to 2½ inches long. The fragrant flowers appear in axillary and terminal cymes. The plant is a native of eastern and northeastern India. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 6.)

47670. CYNOGLOSSUM WALLICHII Don. Boraginaceæ.

An erect, hairy, herbaceous plant, with ovate or lanceolate leaves and elongated racemes of very small bluish or purplish flowers. It is very common in the western part of the temperate Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 157.)

47671. DATURA FASTUOSA L. Solanaceæ.

An ornamental herbaceous annual, common throughout India and the East Indies, which varies in height from 2 to 6 feet. It has entire or deeply toothed leaves about 6 inches long and flowers 7 inches or more in length, varying in color from white to lavender or rose. Propagation is by cuttings. (Adapted from *The Garden*, vol. 46, p. 225.)

47672. DEERINGIA BACCATA (Retz.) Moq. Amaranthaceæ.
(*D. celosioides* R. Br.)

A smooth, somewhat woody climber from Australia, with large, ovate, thin, dark-green leaves, long spikes of greenish white flowers, and bright-red fruits about three-eighths of an inch in diameter. (Adapted from *Curtis's Botanical Magazine*, pl. 2717.)

47673. DICELLOSTYLES JUJUBIFOLIA (Griffith) Benth. Malvaceæ.
(*Kydia jujubifolia* Griffith.)

A tree, more or less hairy throughout, with ovate leaves about 3 inches long and white flowers 1½ inches in diameter, in panicles. It is a native of the eastern tropical Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 333.)

47674. DICENTRA THALICTRIFOLIA (Wall.) Hook. f. and Thoms. Papaveraceæ.

A slender, climbing plant with a perennial root, native to the temperate regions of the Himalayas. It has decomposed leaves and yellow or purple flowers, up to an inch in length. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 121.)

47675. DICHROA FEBRIFUGA Lour. Hydrangeaceæ.

A tall shrub, abundant in the temperate Himalayas from 5,000 to 8,000 feet. It has narrow leaves 3 to 8 inches long, terminal panicles of blue or purplish flowers, and berries of an intense blue. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 406.)

47676. ELAEOCARPUS SIKKIMENSIS Masters. Elaeocarpaceæ.

A tree with elliptic-acuminate serrate leaves about 8 inches long, small inconspicuous flowers in erect racemes, and tubercled ellipsoid drupes 2

47629 to 47830—Continued.

inches long. It is a native of Sikkim, Ind'a. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 402.)

47677. EMBELIA FLORIBUNDA Wall. Myrsinaceæ.

A large climbing shrub with narrow leaves over 8 inches long and large, much divided, axillary racemes of white flowers. It is a native of north-eastern India. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 514.)

47678. ERAGROSTIS NUTANS (Retz.) Nees. Poaceæ. Grass.

A tall annual grass with long narrow spikes which often assume a pinkish tinge when mature. In India, where it is native, it is usually met with in heavy soils and along the banks of streams and borders of rice fields. Though not a first-class fodder grass, cattle eat it readily when other better kinds have failed. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 3, p. 255.)

47679. ERIOBOTRYA PETIOLATA Hook. f. Malaceæ.

A stout tree with leathery leaves 6 to 9 inches long and white flowers, half an inch in diameter, appearing in panicles 3 to 6 inches long and broad. It is a native of Sikkim, India, and the eastern Himalayas, where it grows at altitudes of 5,000 to 9,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 370.)

47680. ERYTHRINA ARBORESCENS Roxb. Fabaceæ.

A small tree, native to the outer Himalayas from the Ganges to Sikkim, India, bearing erect, axillary racemes of large bright-scarlet flowers. (Adapted from *Brandis, Forest Flora of India*, p. 140.)

47681. EURYA ACUMINATA DC. Theaceæ.

A shrub, 10 to 12 feet high, with oblong leathery leaves and white flowers which are either solitary or in fascicles. The wood is reddish white, soft, and close grained. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 3, p. 302, and *Brandis, Forest Flora of India*, p. 24.)

47682. EVODIA FRAXINIFOLIA (D. Don) Hook. f. Rutaceæ.

A small, densely leafy tree with bright-green compound leaves, 8 to 12 inches long, which when bruised, smell strongly like caraway. The white flowers are borne in axillary and terminal cymes; and the red fruits are about half an inch in diameter. In Sikkim, India, where this tree is native, the white soft wood is used for posts. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 3, p. 305, and *Hooker, Flora of British India*, vol. 1, p. 490.)

47683. EVODIA MELIAEFOLIA (Hance) Benth. Rutaceæ.

A small slender tree, native to Assam, India, with cream-colored flowers borne in hairy cymes about 8 inches broad. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 490.)

47684. EXACUM TERES Wall. Gentianaceæ.

A tall herbaceous plant, up to 4 feet in height, with narrow leaves 3½ inches long and rather large blue flowers which are borne in long lax panicles. This plant is common in the tropical regions of the Himalayas, ascending to 5,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 95.)

47629 to 47830—Continued.

47685. *FICUS HOOKERI* Miquel. Moraceæ.

A rather rare tree of the Himalayas of Sikkim, India, where it is found at altitudes of 1,000 to 6,000 feet. The broadly elliptic leaves are 4 to 11 inches in length, and the numerous male flowers are scattered, while the galls and female flowers are practically alike. (Adapted from *Hooker, Flora of British India, vol. 5, p. 505.*)

47686. *FICUS NEMORALIS* Wall. Moraceæ.

A moderate-sized tree of the outer Himalayas of Bhutan and Assam, India, where it ascends to 7,000 feet. The leaves are cut off for cattle feed. The white, close-grained wood weighs 38 pounds per cubic foot (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 3, p. 356.*)

47687. *FRAXINUS FLORIBUNDA* Wall. Oleaceæ.

Ash.

A large, deciduous tree of the Himalayas, from the Indus to Sikkim, India, at altitudes of 5,000 to 8,500 feet. From the trunk is obtained by incision a saccharine exudation, called manna, used as a substitute for the officinal manna. The sugar contained in this exudation, called mannite, differs from cane and grape sugar in not being readily fermentable. Like the officinal manna, it is used for its sweetening and slightly laxative properties. The wood is white with a light-red tinge. It is valuable for oars, plows, spinning wheels, etc. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 3, p. 442.*)

47688. *GOUANIA NAPAENSIS* Wall. Rhamnaceæ.

An unarmed climbing shrub, belonging to the buckthorn family; native to Nepal and Sikkim, India. It has alternate leaves, and the small greenish flowers are in axillary or terminal spikes. (Adapted from *Hooker, Flora of British India, vol. 1, p. 644.*)

47689. *GREWIA MULTIFLORA* Juss. Tiliaceæ.

A shrub or small tree of eastern and western India, ascending to 4,000 feet. The white wood gives out an exceedingly unpleasant odor when cut. It is extensively used in making cot frames, ax handles, oars, etc. The plant is also much used for making hedges, for which its close growth and evergreen leaves make it especially suitable. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 4, p. 179.*)

47690. *GYNURA ANGULOSA* DC. Asteraceæ.

A succulent herbaceous plant, 3 to 10 feet or more in height, with large sessile acuminate stem leaves 6 to 12 inches long; the basal leaves are sometimes 2 feet long. The yellow or purplish flower heads are up to an inch in length. This plant is a native of the temperate regions of the Himalayas. (Adapted from *Hooker, Flora of British India, vol. 3, p. 334.*)

47691. *HIBISCUS PUNGENS* Roxb. Malvaceæ.

Mallow.

An erect, bristly annual or perennial, native to the tropical Himalayas, with roundish heart-shaped, deeply lobed leaves 5 to 8 inches long and yellow flowers with purple centers, 5 inches in diameter. (Adapted from *Hooker, Flora of British India, vol. 1, p. 341.*)

47692. *HOLARRHENA ANTIDYSENTERICA* (Roth) Wall. Apocynaceæ.

A small pale-barked tree, 20 to 30 feet high, native to the tropical Himalayas. The foliage is bright pea green, and the white flowers are

47629 to 47830—Continued.

up to 1½ inches across. The wood is white, tinged with yellow or pink, easily worked, and is used for toys, combs, spoons, etc.; in Assam it is used for furniture. Under the name of *conessi*, the bark and leaves are used medicinally. (Adapted from *Brandis, Forest Flora of India*, p. 326.)

47693. HOLBOELLIA LATIFOLIA Wall. Lardizabalaceæ.

A vigorous, much-branched vine, native of India, bearing axillary racemes of delightfully fragrant green and violet flowers. The ovoid-oblong fruits are about 5 inches long, violet-rose on the outside, with a layer of white flesh just under the skin. This flesh is edible, tasting like the pulp of the granadilla, or passion fruit. (Adapted from *Revue Horticole*, vol. 62, p. 348.)

47694. HYDRANGEA ROBUSTA Hook. f. and Thoms. Hydrangeaceæ.

A small tree or spreading shrub, 8 to 15 feet high, with large ovate leaves up to 9 inches long and hairy corymbs of blue flowers. The white, close-grained wood is moderately hard and easily worked. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 4, p. 310, and *Hooker, Flora of British India*, vol. 2, p. 404.)

47695. HYPERICUM PATULUM Thunb. Hypericaceæ. St.-John's-wort.

An ornamental, hardy, Japanese perennial shrub, from 1 to 3 feet in height, with red stems and branches. It has bright-green leaves and very large yellow flowers, about 2 inches across, borne in terminal, few-flowered cymes. (Adapted from *Curtis's Botanical Magazine*, pl. 5693.)

47696. HYPTIS SUAVEOLENS (L.) Poit. Menthaceæ.

A rigid annual of the mint family, which grows to a height of 2 to 3 feet, has a hairy stem, extremely variable leaves, and secund flower heads. It is a native of tropical America, although introduced into tropical Asia. In Brazil the flowers and leaves are used medicinally as an antispasmodic and as a remedy for gout. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 630, and *Correa, Flora do Brazil*, p. 104.)

47697. ILEX FRAGILIS Hook. f. Aquifoliaceæ. Holly.

This holly, a native of the mountains of Sikkim and Bhutan, India, forms a small tree with bright deep-green leaves which are more membranous than any of the other Indian species. The fleshy, globular fruits are red. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 602.)

47698. ILEX INSIGNIS Hook. f. Aquifoliaceæ. Holly.

A small shrub or tree with thick, grooved branches which are purplish when young; native to the Himalayas of Sikkim, India. The leaves are dark green, leathery, and pinnately lobed, with the lobes spine tipped and alternately raised and depressed. (Adapted from *The Gardeners' Chronicle*, 2d ser., vol. 14, p. 216.)

47699. ILEX INTRICATA Hook. f. Aquifoliaceæ. Holly.

A low, rigid, straggling shrub which forms matted masses with interlaced woody branches. The leaves are bright green, thick, leathery, and spreading, and the fruits are globular and red. The shrub is a native of Sikkim and eastern Nepal, India, where it grows at altitudes of 10,000 to 11,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 602.)

47629 to 47830—Continued.

47700. IMPERATA CYLINDRICA (L.) Beauv. Poaceæ.**Grass.**

A small perennial grass inhabiting the plains and hills of central and western India, where, in April and May, the roadsides and fields become white with its silky heads. The natives use it as a source of fiber and also for thatching. The young succulent foliage which springs up after a fire is much relished by cattle. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 4, p. 336.)

47701. INULA EUPATORIODES DC. Asteraceæ.

A shrubby composite from the eastern Himalayas, with narrow, leathery, irregularly toothed, sharp-pointed leaves and terminal corymbs of yellowish flower heads. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 295.)

47702. KYDIA CALYCINA Roxb. Malvaceæ.

A small tree or large bush common in subtropical forests of India and Burma, ascending to 2,000 feet. The inner bark yields a bast fiber used for coarse ropes, etc. The bark is mucilaginous, and is used to clarify the juice of the cane in manufacturing sugar. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 4, p. 568.)

47703. LAGERSTROEMIA PARVIFLORA Roxb. Lythraceæ.

A large deciduous tree met with in the sub-Himalayan tract in Bengal, Assam, and central and southern India. The gum which exudes from the bark is said to be sweet and edible, and the bark yields a fiber used in the making of ropes. The bark is also used in dyeing skins black and for tanning. The grayish brown wood is very hard and tough, seasons well, and is fairly durable. It is largely employed for agricultural implements, boats, buggy shafts, etc. It is one of the trees on which the tussah silkworm is fed. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 4, p. 584.)

47704. LASIANTHUS BIERMANNI King. Rubiaceæ.

A slender-branched shrub with grayish green leaves 5 to 7 inches in length and axillary cymes of rosy or pale lilac flowers. The fruits are one-fourth of an inch in diameter, roundish, and blue. This shrub is a native of Sikkim, India, and also of the Khasia Mountains. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 190.)

47705. LAUROCERASUS ACUMINATA (Wall.) Roemer. Amygdalaceæ.
(*Prunus acuminata* Hook f.)

A slender-branched tree, 30 to 40 feet high, with smooth, flat, narrow leaves 4 to 7 inches long and many-flowered racemes of yellowish white flowers. It is a native of temperate regions of the central and eastern Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 317.)

47706. LIGUSTRUM CONFUSUM Decaisne. Oleaceæ.**Privet.**

A small tree, sometimes attaining a height of 40 feet in Sikkim, India, where it is native. The leathery leaves are up to 3½ inches long and the white flowers appear in panicles from 1 to 5 inches in length. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 616.)

47707. LOBELIA PYRAMIDALIS Wall. Campanulaceæ.**Lobelia.**

A tall herbaceous plant, 2 to 7 feet in height, with narrow leaves 6 inches long and dense terminal racemes of purplish rose, sometimes nearly white, flowers. It is a native of the Himalayas of northern India. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 426.)

47629 to 47830—Continued.

47708. *LONICERA MACRANTHA* (D. Don) Spreng. Caprifoliaceæ.**Honeysuckle.**

A shrubby honeysuckle, from temperate parts of the Himalayas, with rather large white flowers which fade to yellow. It is closely allied to *L. japonica*. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 10.)

47709. *LONICERA TOMENTELLA* Hook. f. and Thoms. Caprifoliaceæ.**Honeysuckle.**

This white-flowered honeysuckle is a native of the interior valleys of the mountain region of northeastern India, where it forms a shrub 10 to 12 feet high. The leaves are dark dull green, and the paired flowers hang from the axils of the leaves. The blue-black berries are about the size of a pea. (Adapted from *Curtis's Botanical Magazine*, pl. 6496.)

47710. *LUCULIA GRATISSIMA* (Wall.) Sweet. Rubiaceæ.

A tree or a spreading shrub, native to the temperate Himalayas, where it attains a height of 10 to 16 feet. It is a very attractive ornamental, because of the gorgeous rounded mass of pink or rose-colored flowers. It is said to make an excellent table plant when grown in a pot and treated somewhat similarly to a gardenia. (Adapted from *American Gardening*, vol. 28, p. 22, and *Bailey, Standard Cyclopaedia of Horticulture*, vol. 4, p. 1918.)

47711. *MAESA CHISIA* D. Don. Myrsinaceæ.

An evergreen tree, up to 30 feet in height, or sometimes a shrub, native to the Himalayas from Nepal to Bhutan at altitudes of 2,000 to 6,000 feet. The white flowers appear in compound racemes. (Adapted from *Johnson's Gardeners' Dictionary*, p. 487, and *Hooker, Flora of British India*, vol. 3, p. 509.)

47712. *MAESA INDICA* (Roxb.) Wall. Myrsinaceæ.

An evergreen shrub or small tree, common throughout India at altitudes of 6,000 feet or less. The small, white berries are used as food in Nepal, and the leaves are used in Kanara to poison fish. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 5, p. 107, and *Brandis, Forest Flora of India*, p. 283.)

47713. *MAESA MACROPHYLLA* Wall. Myrsinaceæ.

A large shrub or small tree, native to the eastern Himalayas. When the bark is cut a resinous substance exudes. The wood is light brown and moderately hard. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 5, p. 107.)

47714 to 47718. *MAGNOLIA CAMPBELLII* Hook. f. and Thoms. Magnoliaceæ.**Magnolia.**

A beautiful, deciduous magnolia from the Himalayas, where it ascends to 8,000 feet above sea level. It reaches a height of 80 feet, has very dark bark, large elliptical dark-green leaves, and white to purple flowers 10 inches in diameter. (Adapted from *Curtis's Botanical Magazine*, pl. 6793.)

For illustrations of this tree and of a single flower, see Plates III and IV.

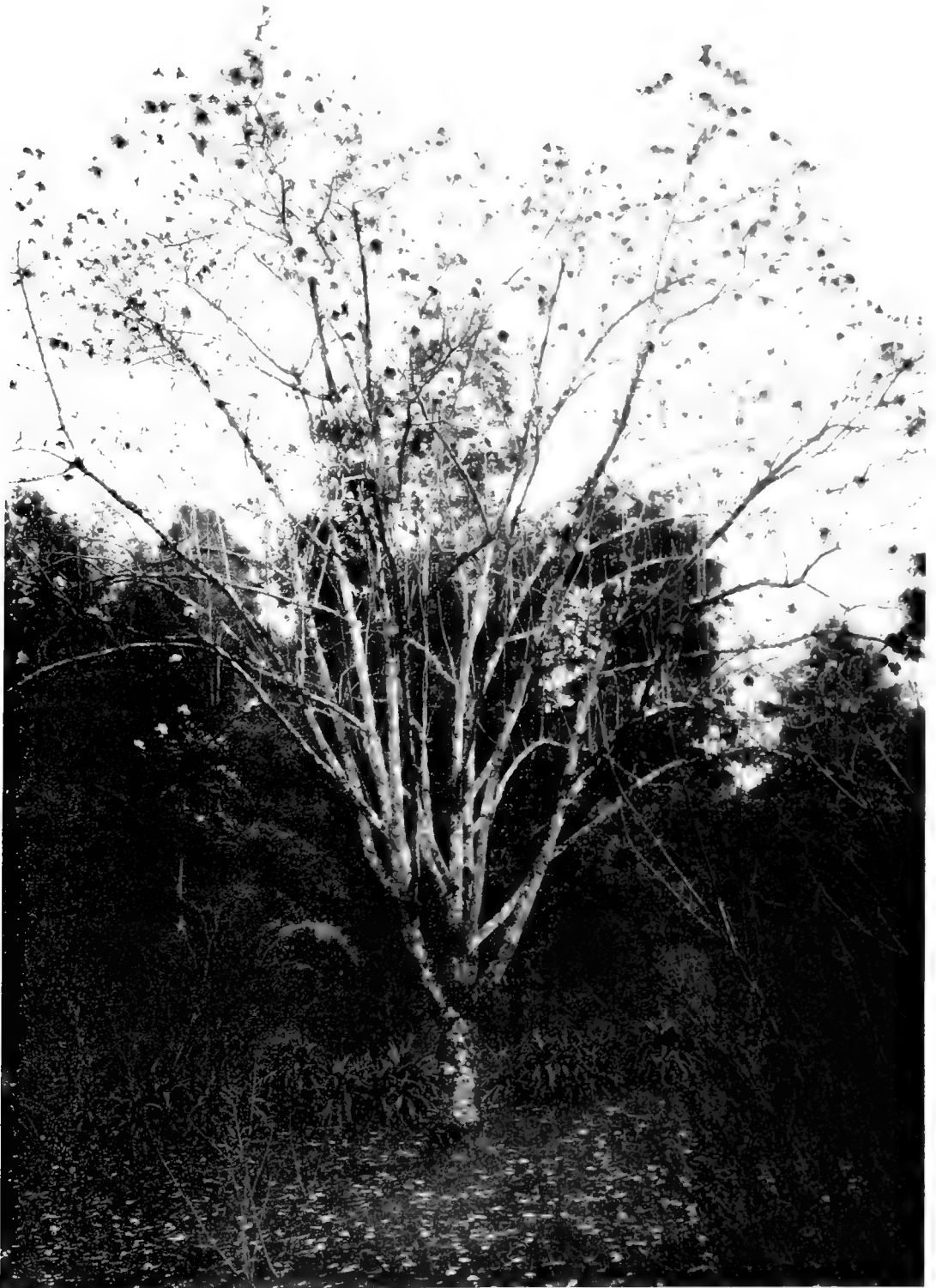
47714. Purple flowered.

47717. Light-red flowered.

47715. Pink flowered.

47718. Dark-red flowered.

47716. White flowered.



THE QUEEN OF MAGNOLIAS AS IT GROWS AT DARJILING, INDIA. (MAGNOLIA CAMPBELLII HOOK. F. AND THOMS., S. P. I. No. 47714.)

Campbell's magnolia, considered the handsomest of that whole genus of beautiful trees, grows 80 feet or more in height and makes, as this picture shows, a wonderful display with its mammoth flowers just before the leaves appear. It is native to the Himalayas, where it ascends to an altitude of 8,000 feet. It has been grown successfully in the milder sections of England and will probably prove hardy only in our Southern States. (Photographed by Joseph F. Rock, Darjiling, India, March 4, 1921; P22743FS.)



A SINGLE FLOWER OF CAMPBELL'S MAGNOLIA, MUCH REDUCED. (MAGNOLIA CAMPBELLII HOOK. F. AND THOMS., S. P. I. NO. 47714.)

The huge flowers of this gorgeous magnolia are from 10 to 14 inches across and range in color from pure white through dark red to purple. The flower here shown was 14 inches across, according to Mr. Rock. (Photographed by Joseph F. Rock, Darjiling, India, March 4, 1921; P22742FS.)

47629 to 47830—Continued.

47719. MAOUTIA PUYA (Hook.) Wedd. Urticacæ.

A shrub, native to the tropical Himalayas and distributed throughout the Straits Settlements and Japan. It is not cultivated, but from the bark is obtained a fiber which is much used for fishing nets, game bags, etc. The dark-green, serrate leaves have silvery lower surfaces. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 5, p. 177.)

47720. MEIBOMIA CEPHALOTES (Roxb.) Kuntze. Fabacæ.
(*Desmodium cephalotes* Wall.)

A tall shrub, with densely silky, acutely angled, zigzag branches and dense umbels of deep-red flowers. It is native to the eastern Himalayas. The Santals of Bengal eat the pods. Cattle and goats are said to be fond of the leaves. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 3, p. 81, and Hooker, *Flora of British India*, vol. 2, p. 161.)

47721. MEIBOMIA FLORIBUNDA (D. Don) Kuntze. Fabacæ.
(*Desmodium floribundum* Don.)

A woody, densely pubescent Himalayan plant with very copious axillary and terminal racemes of red flowers. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 167.)

Received as *Desmodium sambuense*, which is now referred to *Meibomia floribunda*.

47722. MEIBOMIA GYROIDES (DC.) Kuntze. Fabacæ.
(*Desmodium gyroides* DC.)

A shrubby plant, 8 to 10 feet in height, with obtuse, pubescent leaves and axillary and terminal racemes of red flowers. It is a native of the tropical regions of the central and eastern Himalayas. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 175.)

47723. MEIBOMIA HETEROCARPA (L.) Kuntze. Fabacæ.
(*Desmodium polycarpum* DC.)

An erect or suberect undershrub found throughout the Himalayas and in Burma. All of the bushy species of this genus are said to contain good fibers used in some cases for paper making. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 3, p. 83.)

47724. MEIBOMIA PULCHELLA (L.) Kuntze. Fabacæ.
(*Desmodium pulchellum* Benth.)

An erect pubescent shrub, with trifoliolate leaves and red flowers in spikelike axillary and terminal racemes. It is a native of southern India, Bengal, and Burma. (Adapted from Brandis, *Forest Flora of India*, p. 145.)

47725. MEIBOMIA SEQUAX (Wall.) Kuntze. Fabacæ.
(*Desmodium sequax* Wall.)

A shrub, 2 to 20 feet in height, with the branches clothed with dense gray or brown pubescence, and with red flowers in copious racemes. It is a native of the Himalayas from Simla and Kumaon to Sikkim, India. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 170.)

47726. MEIBOMIA TILIAEFOLIA (D. Don) Kuntze. Fabacæ.
(*Desmodium tiliaefolium* Don.)

A large deciduous shrub of the Himalayas, from the bark of which is obtained an excellent fiber used extensively in rope making and also in

47629 to 47830—Continued.

paper manufacture. The roots are used medicinally in bilious complaints, and the leaves are used as fodder. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 3, p. 83.)

47727. MEIBOMIA TRIQUETRA (L.) Kuntze. Fabaceæ.
(*Desmodium triquetrum* DC.)

A shrub with triangular branches, stiff leathery leaflets, and very long, axillary and terminal racemes of red flowers. It is found in moist places in eastern and southern India, and also in China and the Philippines. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 163.)

47728. MELOTHRIA MADERASPATANA (L.) Cogn. Cucurbitaceæ.

A rough, climbing cucurbitaceous plant with 3 to 7 angled leaves, small yellow flowers, and bright-red fruits up to half an inch in diameter. The leaves are used medicinally as a gentle aperient, and a decoction of the seeds is used as a sudorific. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 5, p. 287, and Hooker, *Flora of British India*, vol. 2, p. 623.)

Received as *Mukia scabrella*, which is now referred to this species.

47729. MELOTHRIA ODORATA Hook. f. and Thoms. Cucurbitaceæ.

A climbing herbaceous plant with leaves more or less heart shaped and white axillary flowers. It is native to East Bengal and the northwestern Himalayas, ascending to 7,000 feet. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 626.)

47730. MICHELIA CATHCARTII Hook. f. and Thoms. Magnoliaceæ.

A lofty tree, native to the Himalayas of Sikkim, India, at altitudes ranging from 5,000 to 6,000 feet. The oblong leaves are pale and thin, and the white flowers are an inch in diameter. The sapwood is white and the heartwood dark olive-brown; used for planking. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 5, p. 241.)

47731. MICHELIA EXCELSA Blume. Magnoliaceæ.

A tall deciduous tree, with oblong acute leaves and silky flowers 4 to 5 inches in diameter. It is a native of the temperate Himalayas at altitudes of 5,000 to 8,000 feet. The olive-brown, glossy heartwood is used for furniture and for building purposes. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 5, p. 243, and Hooker, *Flora of British India*, vol. 1, p. 43.)

47732. MICHELIA LANUGINOSA Wall. Magnoliaceæ.

A Himalayan tree of variable height, whose leaves are white and fuzzy beneath and whose white flowers are 3 to 4 inches in diameter. In Sikkim it forms a large bush, flowering in autumn. (Adapted from Hooker, *Flora of British India*, vol. 1, p. 43.)

47733. MICROGLOSSA ALBESCENS (DC.) Benth. Asteraceæ.

An erect, slender, shrubby composite with narrow sharp-pointed leaves with whitish lower surfaces. Originally a native of temperate regions of the Himalayas, it is now cultivated in China and also in southern Europe. It is very ornamental, bearing lilac flowers in large corymbs often 8 inches in diameter. (Adapted from *Revue Horticole*, vol. 79, p. 522, and Hooker, *Flora of British India*, vol. 3, p. 257.)

47629 to 47830—Continued.

47734. MIMOSA RUBICAULIS Lam. Mimosaceæ.

A large, straggling, prickly shrub found throughout the greater part of India, ascending to 5,000 feet in the western Himalayas. The leaves, seeds, pods, and powdered roots are used by the natives medicinally. It is said to be a valuable hedge plant. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 5, p. 249.)

47735. MISCANTHUS NEPALENSIS (Trin.) Hack. Poaceæ. **Grass.**

A tall, perennial, ornamental grass from the temperate regions of the Himalayas. It grows from 3 to 6 feet high and has many densely crowded flower spikes with purplish or golden-yellow, shining spikelets. (Adapted from Hooker, *Flora of British India*, vol. 7, p. 107.)

47736. MUCUNA MACROCARPA Wall. Fabaceæ.

A woody, purple-flowered climbing plant from the Himalayas of north-eastern India, where it grows at altitudes of 1,000 to 6,000 feet. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 186.)

47737. MUSSAENDA INCANA Wall. Rubiaceæ.

An erect herbaceous plant, 2 to 3 feet high, covered with soft, shining hairs. The stiff, ovate leaves are 5 to 6 inches long and the leafy, white calyx lobe is pubescent. The plant is a native of the tropical Himalayas. (Adapted from Hooker, *Flora of British India*, vol. 3, p. 87.)

47738. MUSSAENDA MACROPHYLLA Wall. Rubiaceæ.

A large shrub, native to the tropical Himalayas, with stout branches, slightly hairy leaves up to 10 inches in length, and cymes of flowers with orange-lobed corollas and white-lobed calyces. (Adapted from Hooker, *Flora of British India*, vol. 3, p. 89.)

47739. NEILLIA THYRSIFLORA D. Don. Rosaceæ.

A sparingly branched rosaceous shrub, about 3 feet in height, with deeply 3-lobed dentate leaves and terminal thyrsoid racemes of white flowers which appear at the beginning of autumn. It comes originally from the mountains of Nepal, India. (Adapted from *Revue Horticole*, vol. 60, p. 415.)

47740. NOTOCHAETE HAMOSA Benth. Menthaceæ.

An erect, branched herb, 2 feet and more in height, with ovate acuminate leaves 3 to 5 inches long and dense globular whorls of purple flowers. It is a native of the Himalayas of northeastern India. (Adapted from Hooker's *Icones Plantarum*, vol. 13, pl. 1217.)

47741. NYSSA SESSILIFLORA Hook. f. and Thoms. Cornaceæ.

A large tree, found in the forests of the Himalayas of Sikkim, India. The soft, gray, even-grained wood is used for house building and other purposes. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 5, p. 438.)

47742. OLEA GAMBLEI C. B. Clarke. Oleaceæ.

A wild relative of the cultivated olive, from Sikkim, India, where it grows in the Himalayas. The leathery leaves are oblong and acuminate, and the fruit is sometimes nearly an inch long. (Adapted from Hooker, *Flora of British India*, vol. 3, p. 613.)

47629 to 47830—Continued.

47743. OPHIOPOGON INTERMEDIUS D. Don. Liliaceæ.

A hardy perennial, indigenous to Ceylon, with grasslike leaves and white flowers. It reaches a height of about a foot, and is suited to moist, shady places. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 393.)

47744. OSBECKIA NEPALENSIS Hook. Melastomaceæ.

A handsome plant, native to the Himalayas, with a rough, erect stem 1½ feet high, opposite, lanceolate, rigid leaves, and large purplish rose flowers in terminal and axillary panicles or corymbs. (Adapted from *Hooker, Exotic Flora*, vol. 1, pl. 31.)

47745. OSBECKIA NUTANS Wall. Melastomaceæ.

A woody, branching, small shrub with narrow leaves and small clusters of mauve-purple flowers. It is a native of the subtropical regions of the Himalayas from Sikkim, India, eastward. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 521.)

47746. OSBECKIA ROSTRATA D. Don. Melastomaceæ.

An erect, unbranched plant with broadly lanceolate leaves 3 to 8 inches long and terminal corymbs of rose-purple flowers. It is a native of swampy places at the foot of the Himalayas from Nepal to Burma. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 517.)

47747. OSTODES PANICULATA Blume. Euphorbiaceæ.

A large evergreen tree, native to the forests of Sikkim, India. It yields a gum which is used as sizing in paper manufacture. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 5, p. 654.)

47748. OXYSPORA PANICULATA (D. Don) DC. Melastomaceæ.

A large spreading shrub, with drooping branches terminated by large, lax, almost naked, panicles of rose-purple flowers. The opposite leaves are ovate-acuminate and 4 to 5 inches in length, rarely longer. This shrub is a native of the subtropical and tropical Himalayas from Nepal to Bhutan. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 525.)

47749. PAVETTA INDICA L. Rubiaceæ.

Pawatta.

A very variable bush or small tree, common throughout most of India, ascending to 4,000 feet in Gurhwal. The powdered root is used as a laxative in native medicine, and the fruit, a 2-seeded berry, is picked and eaten in Madras. The white flowers, which occur in broad flat corymbs, are said to be used as food by the hill people of Matheran. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 114, and *Brandis, Forest Flora of India*, p. 275.)

47750. PENTAGONIA PHYSALODES (L.) Hiern. Solanaceæ.

(Nicandra physaloides Gaertn.)

A very attractive annual, 2 or 3 feet high, with ovate-oblong, unevenly cut leaves and rather large, bell-shaped, lavender flowers. It is a native of Peru and Chile. (Adapted from *Curtis's Botanical Magazine*, pl. 2458.)

47751. PHYLLANTHUS EMBLICA L. Euphorbiaceæ.

Nelli.

"A moderate-sized deciduous tree found throughout the tropical forests of India, either wild or planted. It has gray bark and feathery light-green foliage and yields a gum of which little is known. The trunk is often crooked or gnarled. The hard, close-grained wood is used for agri-

47629 to 47830—Continued.

cultural implements, and is much valued for its durability. The fruit, a fleshy berry two-thirds of an inch in diameter, is the emblic myrobalan used in medicine and for dyeing and tanning; it is also pickled and eaten." (*Brandis, Forest Flora of India*, p. 454.)

47752. *PHYLLANTHUS RETICULATUS* Poir. Euphorbiaceæ.

A large, often scandent shrub, common throughout tropical India, especially on moist ground. In Madras the root is used as a dye for producing a red color, and the leaves are employed as a diuretic in Sind. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 223.)

47753. *PHYLLANTHUS WIGHTIANUS* Muell. Arg. Euphorbiaceæ.

A shrubby plant with close-set, drooping leaves which are pale green when dry, and solitary axillary flowers. It is a native of the Nilghiri and Pulney Hills, India. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 5, p. 303.)

Received as *Phyllanthus obliquum* Wall., which is now referred to this species.

47754. *PICEA SMITHIANA* (Wall.) Boiss. Pinaceæ.

(*P. morinda* Link.)

A shapely evergreen, native to Nepal, India, sometimes 150 feet tall. It has widespreading branches, bright or dark-green crowded leaves, purple flowers (pistillate), and dark-brown, glossy cones. It is hardy as far north as New York. (Adapted from *The Gardeners' Chronicle*, 3d ser., vol. 38, p. 395, and Bailey, *Standard Cyclopædia of Horticulture*, vol. 5, p. 2618.)

47755. *PIERIS OVALIFOLIA* (Wall.) D. Don. Ericaceæ.

(*Andromeda ovalifolia* Wall.)

A shrub or small tree with ovate or somewhat oblong leathery leaves 3 to 6 inches long, and racemes of white or bluish or sometimes flesh-colored flowers. Because of a poisonous principle the young leaves and buds are a useful insecticide. It is a native of the temperate parts of the Himalayas. (Adapted from Brandis, *Forest Flora of India*, p. 280, and Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 229.)

47756. *PIPTANTHUS NEPALENSIS* (Hook.) Sweet. Fabaceæ.

A shrub with alternate trifoliate leaves and short hairy racemes of large bright-yellow flowers. It is a native of the Himalayas, growing in shady woods at altitudes of 7,000 to 9,000 feet. In England grown against walls it has proved hardy. (Adapted from Brandis, *Forest Flora of India*, p. 132.)

47757. *PITTOSPORUM FLORIBUNDUM* Wight and Arn. Pittosporaceæ.

A handsome tree with a short straight trunk and spreading branches, numerous yellowish flowers in terminal panicles, and light-colored strong tough wood. The tree yields an aromatic, yellow resin or oleoresin having very tenacious properties. It is a native of the outer Himalayas, ascending to 3,500 feet. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 283, and Brandis, *Forest Flora of India*, p. 19.)

47629 to 47830—Continued.

47758. PLECTRANTHUS COETSA Buch.-Ham. **Menthaceæ.**

A tall, erect, strong-smelling shrubby ornamental plant of the mint family, with very numerous cymes of lavender-blue flowers. It is a native of the temperate regions of the Himalayas at altitudes of 3,000 to 8,000 feet. (Adapted from *Hooker, Flora of British India, vol. 4, p. 619.*)

47759. POGOSTEMON PARVIFLORUS Benth. **Menthaceæ.**

A small bush found in the subtropical portions of the Himalayas. The entire plant has a strong, black-currant odor, and the bruised leaves are used as a poultice for wounds. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 1, p. 306.*)

47760. POLYGONUM CHINENSE L. **Polygonaceæ.**

A rambling or erect shrub, up to 5 feet in height, with very variable foliage and white, pink, or purplish flower heads in corymbs or panicles. It is a native of the subtropical and temperate Himalayas, and is distributed throughout the East Indies and tropical Asia. (Adapted from *Hooker, Flora of British India, vol. 5, p. 44.*)

47761. PORANA RACEMOSA Roxb. **Convolvulaceæ.** **Snow creeper.**

One of the most beautiful of Himalayan plants, occurring in dense, not lofty, masses, climbing over other plants in the jungle, with the closely massed, dazzling white flowers resembling patches of snow. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 1, p. 327.*)

47762. POTENTILLA FRUTICOSA L. **Rosaceæ.**

A much-branched, rigid, robust shrub, native to the temperate and sub-alpine parts of the Himalayas, ascending to 16,000 feet. The fragrant leaves when dried are used in the upper parts of the Chenab basin as a substitute for tea. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 1, p. 332.*)

47763. POTENTILLA MOONIANA Wight. **Rosaceæ.**

A tall, erect-branched, leafy plant from Ceylon and the lower altitudes of northern India. The narrow leaves are 5 to 10 inches long, and the flowers are in panicles or corymbs. (Adapted from *Hooker, Flora of British India, vol. 2, p. 349.*)

47764. PRATIA MONTANA (Reinw.) Hassk. **Campanulaceæ.**

A tall, rambling, herbaceous plant with long branches, narrow leaves about 4 inches long, and axillary green flowers marked with purple. It has globular black-purple berries. This plant is a native of the temperate parts of the Himalayas. (Adapted from *Hooker, Flora of British India, vol. 3, p. 423.*)

47765. PRIOTROPIS CYTISOIDES (Roxb.) Wight and Arn. **Fabaceæ.**

A low shrub with slender, glabrous branches, trifoliolate leaves, and copious racemes of pale-yellow flowers. It is a native of the tropical parts of the eastern Himalayas. (Adapted from *Hooker, Flora of British India, vol. 2, p. 65.*)

47629 to 47830—Continued.

- 47766.** *PRUNUS CERASOIDES* D. Don. Amygdalaceæ. **Himalayan cherry.**
(*P. puddum* Roxb.)

A moderate-sized or sometimes large tree, native to northeastern India, known as the "wild cherry of the Himalayas." The rose-red or white flowers give the tree a brilliant appearance in the late fall, and the small, oblong fruits, with scanty flesh, are little used as food. The wood is reddish and beautifully mottled, and is used for walking sticks, furniture, etc. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 350.)

- 47767.** *PRUNUS NAPAULENSIS* (Seringe) Steud. Amygdalaceæ.
Nepal cherry.

A small tree with narrow acuminate leaves 4 to 6 inches long and axillary racemes of white flowers. The drupes are about twice the size of a large pea and acid. This tree is a native of the temperate Himalayas at altitudes of 4,000 to 10,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 316.)

- 47768.** *PSYCHOTRIA ERRATICA* Hook. f. Rubiaceæ.

A shrubby plant, native to Nepal and Sikkim, India, where it ascends from 4,000 to 6,000 feet above the sea. The rather thin leaves are elliptic or lance shaped and up to 7 inches in length, and the very small fruits are red and yellowish. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 168.)

- 47769.** *RANDIA ULIGINOSA* (Retz.) Poir. Rubiaceæ.

A small deciduous tree of eastern, central, and southern India, with shining leaves and large, showy, white or cream-colored flowers. The succulent fruit is used in dyeing as an intensifier, and also in medicine as an astringent. Boiled or roasted, it is often eaten by the natives as a vegetable. The leaves are boiled and eaten as greens. When unripe, the fruit is used to poison fish. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 391, and *Brandis, Forest Flora of India*, p. 273.)

- 47770.** *RHAMNUS NAPALENSIS* (Wall.) M. Laws. Rhamnaceæ.

A rambling or somewhat erect shrub with long slender branches, dark-green shining leaves, small green flowers, and blackish red fruits. It is a native of the Himalayas of northeastern India. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 640.)

- 47771.** *RHODODENDRON ARBOREUM* J. E. Smith. Ericaceæ.

This Himalayan rhododendron is variable both in its foliage and in the color of its flowers. In one form the leaves are silvery on the lower surface, while in another they are covered with a brownish red down. The bell-shaped flowers, borne in dense trusses, vary from deep crimson to pure white. The tree sometimes reaches a height of 35 feet, with a trunk 4 feet in circumference. (Adapted from *Flora and Sylva*, vol. 3, p. 34.)

- 47772.** *RHODODENDRON CILIATUM* Hook. f. Ericaceæ.

A somewhat dwarf growing Himalayan rhododendron, bearing many small, loose trusses of pinkish white flowers less than 3 inches wide. It rarely exceeds 6 feet in height. (Adapted from *Flora and Sylva*, vol. 3, p. 35.)

47629 to 47830—Continued.

47773. RHODODENDRON DALHOUSIAE Hook. f. Ericaceæ.

This is said to be the finest rhododendron from northeastern India, chiefly because of the great size and beauty of the fragrant flowers which resemble those of a large lily. It is a straggling shrub, 6 to 8 feet high, with smooth dark-green leaves. The flowers, which grow in terminal clusters of three to five, are about $4\frac{1}{2}$ inches across. (Adapted from *Curtis's Botanical Magazine*, pl. 4718.)

47774. RHODODENDRON FALCONERI Hook. f. Ericaceæ.

This shrub or tree, which attains a height of 30 feet, is a native of northeastern India. Because of the large deep-green leaves, sometimes a foot long, and the whitish, densely clustered flowers, this is a very fine ornamental. (Adapted from *Curtis's Botanical Magazine*, pl. 4924.)

47775. RHODODENDRON GRANDE Wight. Ericaceæ.

A handsome shrub about 15 feet high, native to the Himalayas. It bears numerous loose trusses of bell-shaped flowers about $2\frac{1}{2}$ inches in diameter. These are at first suffused with a faint rose tint which later changes to white. (Adapted from *Flora and Sylva*, vol. 3, p. 36.)

47776. RHODODENDRON MADDENI Hook. f. Ericaceæ.

An ornamental Himalayan shrub 6 to 8 feet high. The dark-green leaves are from 4 to 7 inches long, with deep-red petioles. The large, delicate, fragrant flowers, white tinged with rose, occur in threes at the ends of the branches. (Adapted from *Curtis's Botanical Magazine*, pl. 4805.)

47777. RHODODENDRON BOYLEI Hook. f. Ericaceæ.

(*R. cinnabarinum* Hook. f.)

An evergreen shrub, 6 to 10 feet high, with smooth grayish green leaves, and very attractive flowers. Ordinarily the flowers, produced in terminal heads of 5 to 8, are of a dull cinnabar red. In some forms the corolla is orange-red outside and yellowish within. This shrub is a native of Sikkim and Bhutan, India. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 351.)

47778. RHUS SUCCEDANEA L. Anacardiaceæ.

Sumach.

A tree about 30 feet in height with a short trunk 3 feet in circumference and compound leaves up to a foot in length. The greenish yellow flowers appear on numerous lateral panicles, and the yellow or light-brown drupes inclose large oily seeds. In Japan a beautiful white wax, suitable for making candles, is prepared from the seeds. The tree also yields a small supply of varnish. It is a native of many parts of the Himalayas at altitudes ranging from 2,000 to 8,000 feet. (Adapted from *Brandis, Forest Flora of India*, p. 121.)

Received as *Rhus acuminata*, which is now referred to this species.

47779. ROSA MACROPHYLLA Lindl. Rosaceæ.

Rose.

This rose, a native of the northwestern Himalayas, ascending to 10,000 feet, is erect, often unarmed, and has large red flowers, $1\frac{1}{2}$ to 2 inches long, either solitary or in terminal corymbs. The large, soft, turbinate fruit is an inch long, and is eaten. This rose is hardy in England. (Adapted from *Brandis, Forest Flora of India*, p. 203.)

47629 to 47830—Continued.

47780. RUBIA CORDIFOLIA L. Rubiaceæ.**Madder.**

A climbing, woody, white-barked perennial, found throughout the hilly districts of India, with whorls of prickly leaves and purplish black fruits about one-third of an inch in diameter. The fruits and roots are used in native medicine, chiefly as an astringent. (Adapted from *Kirtikar, Indian Medicinal Plants*, pt. 1, p. 663.)

47781. RUBUS ELLIPTICUS J. E. Smith. Rosaceæ.**Raspberry.**

A tall suberect bush, native to the temperate and subtropical Himalayas. The fruit is yellow and has the flavor of a raspberry. In the Himalayas it is commonly eaten either raw or made into a preserve and is said to be one of the best wild fruits of India. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 581.)

47782. RUBUS MOLUCCANUS L. Rosaceæ.

An East Indian *Rubus* with ornamental and very variable foliage. It is a climber with fuzzy stems and heart-shaped, 5-lobed, deep-green leaves whose lower surfaces are thickly covered with cream-colored down. (Adapted from *The Gardeners' Chronicle*, 3d ser., vol. 33, p. 308.)

47783. RYTILIX GRANULARIS (L.) Skeels. Poaceæ.**Grass.***(Manisuris granularis L.)*

An annual, erect, much-branched grass found throughout the hotter parts of India. The stem is from 1 to 2 feet or more in length, and it and the flaccid flat leaves are softly hairy. (Adapted from *Hooker, Flora of British India*, vol. 7, p. 159.)

47784. SAURAUJA NAPAULENSIS DC. Dilleniaceæ.

A large shrub or tree, native to the Himalayas from Bhutan to Gurhwal, India, at altitudes of 2,400 to 7,000 feet. The narrow hairy leaves are 7 to 14 inches long, the pink flowers occur in axillary panicles, and the green mealy sweet fruit is edible. (Adapted from *Brandis, Forest Flora of India*, p. 25, and *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 3, p. 479.)

47785. SAUROPUS ALBICANS Blume. Euphorbiaceæ.

An erect, somewhat shrubby plant with terete green branches, small greenish red flowers, and small fleshy fruits. It is a native of the hot valleys of the Himalayas of Sikkim, India, and is distributed southward to Ceylon and eastward to the Philippines. (Adapted from *Hooker, Flora of British India*, vol. 5, p. 332.)

47786. SAUSSUREA DELTOIDES (DC.) C. B. Clarke. Asteraceæ.

A tall composite, 4 to 8 feet in height, having large leaves with cottony lower surfaces. The extremely variable heads are often tipped with purple and the corollas are white. It is a native of the central and eastern Himalayas, growing at altitudes of 6,000 to 11,500 feet. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 374.)

47787. SCHEFFLERA IMPRESSA (C. B. Clarke) Harms. Araliaceæ.*(Heptapleurum impressum C. B. Clarke.)*

A handsome tree of the northeastern Himalayas at altitudes of 6,000 to 11,000 feet, where it commonly attains a height of 60 feet, and is easily recognized by its woolly leaves. The thick brown bark yields a copious gum and the wood is white or gray and soft. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 4, p. 222.)

47629 to 47830—Continued.

- 47788.** SCHEFFLERA VENULOSA (Wight and Arn.) Harms. Araliaceæ.
(*Heptapleurum venulosum* Seem.)

A small glabrous tree or climbing shrub frequent in the mixed forests throughout tropical and subtropical India. The light-brown soft wood is used as lumber. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 4, p. 222.)

- 47789.** SCHIMA WALLICHII (DC.) Choisy. Theaceæ.

A large evergreen tree, 80 to 100 feet in height, native to the eastern Himalayas at altitudes of 2,000 to 5,000 feet. The wood, which is rough, red, close grained, and moderately hard, is used for many purposes, chiefly building. The bark causes itching of the skin. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 2, p. 485.)

- 47790.** SELINUM TENUIFOLIUM Wall. Apiaceæ.

A highly ornamental Himalayan plant with very finely divided fernlike leaves. When the plant is isolated on a lawn and not allowed to flower, the effect is very striking because of the fresh green color of the leaves. It is perfectly hardy in England. (Adapted from *The Garden*, vol. 38, p. 221.)

- 47791.** SENECIO SCANDENS Buch.-Ham. Asteraceæ.

A beautiful autumn-flowering senecio from the Himalayas, with a woody stem and climbing habit. The yellow flowers are in few-flowered loose paniclelike clusters. Because of its rustic beauty and its habit of flowering in October, this plant is a very desirable ornamental. (Adapted from *Revue Horticole*, vol. 81, p. 407.)

- 47792.** SENECIO UNCINELLUS DC. Asteraceæ.
(*S. densiflorus* Wall.)

A tall, shrubby plant, native to the central and eastern Himalayas at altitudes of 4,000 to 6,000 feet. In the district of Huzara the leaves are applied to boils. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 2, p. 500.)

- 47793.** SHUTERIA HIRSUTA Baker. Fabaceæ.

A densely hairy, trifoliolate climber with lax racemes of purple flowers and recurved hairy pods. It is a native of Sikkim and Khasia, India, where it grows at altitudes of 3,000 to 5,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 182.)

- 47794.** SIDA ACUTA Burm. f. Malvaceæ.

A shrubby perennial distributed generally throughout the hotter portions of India, from whose stems a good fiber is obtained. From the long cylindrical root is obtained by decoction a remedy for stomach troubles. The expressed juice of the root is also employed as a vermifuge. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 2, p. 679.)

Received as *S. carpinifolia*, which is now referred to this earlier species.

- 47795.** SKIMMIA LAUREOLA (DC.) Sieb. and Zucc. Rutaceæ.

An evergreen, strongly aromatic shrub, found throughout the temperate Himalayas at altitudes ranging from 6,000 to 10,000 feet. The white flowers are crowded into terminal panicles, and the red fleshy fruits are ellipsoid and up to three-fourths of an inch in length. The

47629 to 47830—Continued.

timber is used to make hoe and ax handles. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 3, p. 244, and *Hooker, Flora of British India*, vol. 1, p. 499.)

47796. SMILAX ASPERICAULIS Wall. Smilacaceæ.**Smilax.**

A climbing shrub having roughish stems, thin leaves with rounded or clawed tips, many-flowered umbels, and globular berries nearly half an inch in diameter. It is a native of the Sikkim Himalayas, India. (Adapted from *Hooker, Flora of British India*, vol. 6, p. 306.)

47797. SOLANUM CRASSIPETALUM Wall. Solanaceæ.

A Himalayan shrub, 2 to 9 feet in height, with narrow leaves acute at both ends. In Sikkim the leaves are cooked and eaten. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 232.)

47798. SOLANUM KHASIANUM C. B. Clarke. Solanaceæ.

A stout plant with a stem densely yellow hirsute, armed with straight prickles two-thirds of an inch long. The deeply lobed leaves are 7 inches in length, and the berries are an inch in diameter. This plant is a native of the Khasia Mountains, India. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 234.)

47799. SOLANUM MACRODON Wall. Solanaceæ.

An erect shrubby plant covered with bristly glistening hairs, with leaves 2 to 6 inches in length and purple-rose or nearly white flowers. It is a native of the temperate regions of the Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 232.)

47800. SOLANUM VERBASCIFOLIUM L. Solanaceæ.

A shrub or small tree frequently encountered throughout tropical and subtropical India. In the southern part of India it is cultivated for its fruit, which is small and is eaten in curries. The wood is light yellow and soft. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 3, p. 273.)

47801. SPIRÆA BELLA Sims. Rosaceæ.**Spirea.**

A low shrub with oval, acute, finely serrate leaves with whitish lower surfaces and terminal panicles of bright-purple flowers. It is a native of Nepal, and appears to be hardy in England. (Adapted from *Curtis's Botanical Magazine*, pl. 2426.)

47802. SPIRÆA MICRANTHA Hook. f. Rosaceæ.**Spirea.**

A shrub found on the temperate slopes of the Himalayas in north-eastern India at altitudes of 6,000 to 10,000 feet. It is closely related to *Spiraea bella*, but is more lax in habit. The ovate-lanceolate leaves are sometimes 7 inches long, and the pale-pink flowers, often one-fourth of an inch across, are borne in long, spreading panicles. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 325.)

47803. SPOROBOLUS INDICUS (L.) R. Br. Poaceæ.**Grass.**

A grass found on the plains of India and generally distributed over the tropical and subtropical parts of the world. It is considered to be a good fodder grass, especially when young. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 3, p. 341.)

47629 to 47830—Continued.

47804. STEPHANIA ROTUNDA Lour. Menispermaceæ.

A large climber, native to the northwestern Himalayas, with tuberous roots, large peltate leaves up to 7 inches in width, and axillary umbels of yellow flowers. (Adapted from *Brandis, Forest Flora of India*, p. 571.)

47805. STIZOLOBIUM PRURITUM BIFLORUM (Trimen) Piper. Fabaceæ.

This 2-flowered variety of *Stizolobium pruritus* has leaflets which are very silky beneath and sickle-shaped pods, about 2 inches long, covered with red, erect, stinging hairs. It is a native of Ceylon. (Adapted from *Piper, Proceedings of the Biological Society of Washington*, vol. 30, p. 60.)

47806. STYRAX SERRULATUM Rozb. Styraceæ.

A bush or small tree common in southern Japan, where it is much cultivated on account of its ornamental appearance. The leaves are very variable in size and form, usually elliptic or narrower; and the white flowers, three-fourths of an inch in diameter, are in drooping cymes. This plant is also found in the Himalayas of northeastern and eastern India. (Adapted from *Curtis's Botanical Magazine*, pl. 5950.)

47807. SWERTIA BIMACULATA (Sieb. and Zucc.) Hook. f. and Thoms. Gentianaceæ.

An erect annual, 2 to 6 feet in height, with numerous white or yellowish green flowers in panicles. This plant is a native of the eastern Himalayas at altitudes of 5,000 to 8,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 123.)

47808. SWERTIA PURPURASCENS (D. Don) Wall. Gentianaceæ.

This species differs from *Swertia bimaculata* in having purple flowers with reflexed corolla lobes. It grows on the western Himalayas at altitudes ranging from 5,000 to 12,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 121.)

47809. SWERTIA TONGLUENSIS Burkill. Gentianaceæ.

An erect herbaceous perennial, 10 inches or more in height, with ovate, sessile leaves and panicles of inconspicuous greenish flowers. It is a native of Darjiling and Sikkim, India. (Adapted from *Kirtikar, Indian Medicinal Plants*, vol. 2, p. 851, and *Journal of the Asiatic Society of Bengal*, vol. 2, p. 319.)

47810. TAMARIX DIOICA Roxb. Tamaricaceæ.

A gregarious shrub or small tree found near rivers and on the sea-coast throughout India, where it is often planted for ornament on account of its spikes of pink flowers and attractive foliage. A peculiar bittersweet gum, or manna, is obtained from this plant, which is used in some places for making confections. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 3, p. 410, and *Hooker, Flora of British India*, vol. 1, p. 249.)

47811. TETRASTIGMA BRACTEOLATUM (Wall.) Planch. Vitaceæ.
(*Vitis bracteolata* Wall.)

A slender-branched sarmentose shrub with smooth stems, cymes of very small green flowers, and dry 2 to 4 seeded fruits. It is a native of Bhutan and Assam, India. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 654.)

47629 to 47830—Continued.

- 47812. THEMEDA TRIANDRA** Forsk. Poaceæ.
(*Anthistiria imberbis* Retz.)

Grass.

A tall perennial grass with the spikes in globose or fan-shaped fascicles and rather rigid, very narrow leaves 3 to 10 inches long. It reaches a height of 1 to 6 feet, is a native of the hotter and drier parts of India, and is distributed throughout the warmer regions of the Old World. (Adapted from *Hooker, Flora of British India*, vol. 7, p. 211.)

- 47813. TODDALIA ASIATICA** (L.) Lam. Rutaceæ.
(*T. aculeata* Pers.)

A rambling shrub, native to the subtropical Himalayas. This is perhaps one of the most valuable of Indian medicinal plants. The unripe fruit and root are mixed with oil to form a stimulant liniment for rheumatism; the fresh leaves are eaten raw for pains in the intestines, and the fresh bark of the root is considered an excellent febrifuge. The ripe berries are fully as pungent as black pepper, and they are pickled by the natives with excellent results. Upon distillation the leaves yield a pale yellowish green oil having the odor of citron peel and a bitter aromatic taste. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 58.)

- 47814. TRACHYCARPUS MARTIANA** (Wall.) Wendl. Phœnicaceæ. Palm.

A tall, unarmed palm, 20 to 50 feet high, clothed beneath the crown with persistent leaf sheaths. The rigid leathery leaves are 4 to 5 feet in diameter and cut half way down into linear 2-lobed segments. The flowers are yellow and the fruits bluish. This palm is a native of the temperate Himalayas at altitudes of 6,000 to 8,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 6, p. 436.)

- 47815. TRICHOLEPIS FURCATA** DC. Asteraceæ.

A slender yellow-flowered composite, 2 to 6 feet in height, with the flowers in nodding heads. It is a native of the temperate parts of the Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 380.)

- 47816. TRICHOSANTHES HIMALENSIS** C. B. Clarke. Cucurbitaceæ.

A climber with hairy, palmately 3-lobed leaves 5 inches wide, white flowers, and fruits 3 to 4 inches long. It is a native of Sikkim, India, where it grows at altitudes of 2,000 to 5,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 608.)

- 47817. TRIDAX PROCUMBENS** L. Asteraceæ.

A perennial trailing composite, with short bristly hairs covering the branches and the deeply toothed, rhomboid leaves. The yellowish flowers appear in dense heads. This plant is a native of tropical America. (Adapted from *Queensland Agricultural Journal*, vol. 25, p. 484.)

- 47818. TRIUMFETTA RHOMBOIDEA** Jacq. Tiliaceæ.

A herbaceous or somewhat woody plant, common in tropical and subtropical India and Ceylon up to 4,000 feet above the sea. It has dense cymes of yellow flowers and burlike fruits. The plant yields a soft, glossy fiber. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 202, and *Hooker, Flora of British India*, vol. 1, p. 395.)

47629 to 47830—Continued.

47819. *TSUGA BRUNONIANA* (Wall.) Carr. Pinaceæ.

A tall evergreen tree, sometimes attaining 120 feet in height, with spreading branches and pendulous branchlets. It is a native of north-eastern India, but is said to be not quite hardy in England. The wood is soft and white, and the bark is used for roofing. (Adapted from *Brandis, Forest Flora of India*, p. 527.)

47820. *DESMOS CHINENSIS* Lour. Annonaceæ.

(*Unona discolor* Vahl.)

A spreading shrub with slender leafy branches, shining oblong leaves up to 8 inches in length, and yellow odorous flowers. It is found in the tropical forests of northeastern and eastern India. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 59.)

47821. *VACCINIUM DUNALIANUM* Wight. Vacciniaceæ.

A large erect shrub, with angular, leafy branches, oblong-lanceolate slender-tipped leaves, and axillary racemes of small inconspicuous flowers. It is a native of Sikkim, Bhutan, and the Khasia Mountains, India. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 453.)

47822. *VACCINIUM NUMMULARIA* Hook. f. and Thoms. Vacciniaceæ.

A small, rigid, epiphytic plant with densely hairy, almost bristly branches, leathery leaves, and small racemes of rose-colored flowers. It is a native of Sikkim and Bhutan, India, growing at altitudes of 8,000 to 10,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 451.)

47823. *VACCINIUM SERRATUM* (Don) Wight. Vacciniaceæ.

A shrub, often epiphytic, found in Sikkim, Bhutan, and the Khasia Hills, India. The flowers have an acid taste and are used by the natives of the Garo Hills in their curries. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 218.)

47824. *VERNONIA VOLKAMERIAEFOLIA* DC. Asteraceæ.

A small robust tree with large leaves up to 12 inches in length, and very numerous flower heads in terminal leafless panicles. The persistent pappus is whitish. The tree is a native of Sikkim and the Khasia Mountains. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 240.)

47825. *VIBURNUM COLEBROOKEANUM* Wall. Caprifoliaceæ.

A large spreading shrub, 6 to 15 feet in height, with large oblong leaves and large corymbs of very small white flowers. It is common in the subtropical Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 5.)

47826. *VIBURNUM CYLINDRICUM* Buch.-Ham. Caprifoliaceæ.

A large shrub or small tree, common in the Himalayas of northeastern India at altitudes of 4,000 to 8,000 feet. The natives of Nepal are said to extract from the seeds an oil which they use for food and also for burning. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 232.)

47827. *VIBURNUM ERUBESCENS* Wall. Caprifoliaceæ.

A shrub or small tree with slender, ash-colored branches, drooping panicles of white or yellowish white flowers, and red ovoid fruits one-quarter of an inch long. The very hard, reddish wood is close and even grained and could be used as a substitute for boxwood and for carving.

47629 to 47830—Continued.

(Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 233, and Brandis, *Forest Flora of India*, p. 259.)

47828. ZANTHOXYLUM ACANTHOPODIUM DC. Rutaceæ.

A small tree, native to the hot valleys of the subtropical Himalayas, ascending to 7,000 feet. The berries are about the size of peas and contain one black seed. From these berries is extracted an essential oil, isomeric with oil of turpentine. The natives use the seeds and bark for dyspepsia, fever, cholera, etc. The wood is close grained and yellow and is used for walking sticks, pestles, etc. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 323.)

47829. ZANTHOXYLUM OVALIFOLIUM Wight. Rutaceæ.

A large shrub found in the Nilgiri Hills, Khasia Mountains, Assam, etc., in India, and also in Singapore, whose fruit and bark probably possess medicinal properties similar to those of other members of this genus. The light yellowish white wood is very hard and close grained. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 325.)

47830. ZANTHOXYLUM OXYPHYLLUM Edgeworth. Rutaceæ.

A climbing prickly shrub found at altitudes of 6,000 to 9,000 feet in the Himalayas from Gurhwal to Bhutan. The fruits are used medicinally, being supposed to have astringent, stimulative, and digestive properties. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 325.)

47831 to 47858.

From Darjiling, Bengal, India. Presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden. Received June 11, 1919.

47831. ACER SIKKIMENSE Miquel. Aceraceæ.**Maple.**

A small tree, native to the hills of Sikkim and Bhutan, India, with heart-shaped green leaves and spikelike racemes which appear with the leaves. The wood is shining and gray. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 71.)

47832. ALBIZZIA PROCERA (Roxb.) Benth. Mimosaceæ.

A large tree, often 60 to 80 feet high, sometimes more, with yellowish or greenish white bark and large compound leaves composed of 6 to 8 pairs of leaflets. The yellowish white flowers are borne in heads in terminal panicles. The heartwood is light or dark brown, and is largely used for agricultural implements, wheels, etc. The tree is a native of moist places in Burma, Bengal, and southern India. (Adapted from Brandis, *Forest Flora of India*, p. 175.)

47833. ARTOCARPUS LAKOOCHA Roxb. Moraceæ.

A large evergreen tree, native to the foothills of eastern and southern India, with leathery oval or ovate leaves up to 10 inches in length and irregularly roundish edible acid fruits, which are 3 to 4 inches in diameter and velvety yellow when ripe. The bark yields a resinous gum, and from the bark also is prepared a fiber which is used for cordage. The root yields a yellow dye, and the hard, yellow heartwood is used for making furniture. The fruit and also the spadix of the flowers are used in curries. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 333.)

47831 to 47858—Continued.

47834. *BARLERIA STRIGOSA* Willd. Acanthaceæ.

A shrubby plant, much cultivated in India, but wild in the lower hills of Bengal, Orissa, etc. It is 2 to 4 feet in height, has large ovate leaves, and dense spikes of blue flowers. From the root is prepared a native medicine used as an antispasmodic. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 1, p. 401, and *Hooker, Flora of British India*, vol. 4, p. 489.)

47835. *BISCHOFIA TRIFOLIATA* (Roxb.) Hook. Euphorbiaceæ.
(*B. javanica* Blume.)

A large tree, found in shady ravines in the hills of Kumaon, Gurhwal, India, south to Ceylon, and also in southern Asia. It is very handsome, attaining a height of 70 feet, with a dense oval crown and deep-green foliage which turns red before falling. The pale-red fine-grained wood is used for furniture. (Adapted from *Brandis, Forest Flora of India*, p. 446.)

47836. *BOEHMERIA MACROPHYLLA* D. Don. Urticaceæ.

A broad-leaved shrub, native to northern and northeastern India, where it ascends to 4,000 feet. The bark yields a beautiful fiber, much prized for fishing nets. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 1, p. 467.)

47837. *BOEHMERIA PLATYPHYLLA* D. Don. Urticaceæ.

A large shrub or small tree with opposite, broadly ovate leaves, native to the Khasi Hills, eastern Bengal and southern India. The wood is moderately hard and reddish brown. All of the species of this genus are said to yield good fibers. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 1, p. 481.)

47838. *CALLICARPA MACROPHYLLA* Vahl. Verbenaceæ.

A tall shrub with the branches and stems thickly covered with gray woolly felt. The narrow wrinkled leaves are 6 to 10 inches long, and the small rose-colored flowers are in much-branched cymes. The shrub is a native of Bengal and Burma, India. The heated leaves are applied to rheumatic joints. (Adapted from *Brandis, Forest Flora of India*, p. 368.)

47839. *CITRUS SINENSIS* (L.) Osbeck. Rutaceæ.

Orange.

"Sikkim orange." (*Cave.*)

47840. *DYSOXYLUM BINECTARIFERUM* (Roxb.) Hook. f. Meliaceæ.

An evergreen tree, 30 feet or more in height, with compound leaves 9 to 18 inches long, composed of 5 to 9 leaflets, and panicles of pale-green flowers. The leathery reddish fruits are 2½ inches long, and the seeds are dark purple and polished. This tree is a native of the Khasia Hills and Assam, India. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 546.)

47841. *ELAEAGNUS PYRIFORMIS* Hook. f. Elæagnaceæ.

A shrubby plant with oblong or elliptic, somewhat silvery leaves, clustered flowers, and small turgid fruits, one-third of an inch long, covered with brown, hardly shining scales. The plant is a native of the Mishmi Hills, India. (Adapted from *Hooker, Flora of British India*, vol. 5, p. 202.)

47831 to 47858—Continued.**47842. ENGELHARDTIA SPICATA** Leschen. Juglandaceæ.

A large handsome tree, belonging to the walnut family, native to the foothills of the eastern Himalayas. The thick brown bark contains much tannin; the wood shows a beautiful grain and is said not to warp. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 3, p. 244.)

47843. FICUS ALTISSIMA Blume. Moraceæ.

A large, spreading tree, native to the tropical Himalayas. It is said to yield as good caoutchouc as its relative, *Ficus elastica*. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 3, p. 342.)

47844. GYNOSTEMMA PEDATUM Blume. Cucurbitaceæ.

A climbing herbaceous plant with leaves composed of three to five membranous leaflets up to 5 inches in length and globose fruits about the size of a pea. It is a native of northeastern India. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 633.)

47845. IPOMOEA KINGII Prain. Convolvulaceæ. **Morning-glory.**

A large white-flowered climber belonging to the morning-glory family, with narrow heart-shaped leaves up to 6 inches in length. It is a native of northeastern India at altitudes of 2,000 to 5,000 feet. (Adapted from *Journal of the Asiatic Society of Bengal*, vol. 63, p. 110.)

47846. LEONOTIS NEPETAEFOLIA (L.) Ait. Menthaceæ.

An annual, 4 to 6 feet high, with a stem as thick as one's finger, thin crenate leaves, and whorls of orange-red flowers. It is native to the hotter parts of India, and is distributed to tropical Asia, Africa, and America. (Adapted from Hooker, *Flora of British India*, vol. 4, p. 691.)

47847. MANISURIS STRIATA (Nees) Kuntze. Poaceæ. **Grass.**

A tall slender grass, with a stem 3 to 4 feet long, very narrow, flat leaves 2 to 4 feet in length, and pale, slender spikes about 2 inches long. It is a native of the Sikkim Himalayas, India, where it ascends to 4,000 feet. (Adapted from Hooker, *Flora of British India*, vol. 7, p. 157.)

47848. PANICUM PATENS L. Poaceæ. **Grass.**

A creeping grass, found throughout India, with a leafy stem 1 to 3 feet long, leaves 2 to 6 inches in length, and spreading panicles. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 7, p. 57.)

47849. PHLOGACANTHUS PUBINERVIUS T. Anders. Acanthaceæ.

A much-branched shrub, 3 to 8 feet in diameter, with numerous axillary cymes of red flowers. It is a native of Sikkim, Bhutan, and Assam, India. (Adapted from Hooker, *Flora of British India*, vol. 4, p. 513.)

47850. PUERARIA PHASEOLOIDES (Roxb.) Benth. Fabaceæ.

A twining, scarcely woody plant, clothed with dense, spreading, brown hairs; native to the tropical regions of the eastern Himalayas. The leaflets are green above and densely matted with gray hairs beneath. The reddish flowers are borne in copious long-stemmed racemes. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 199.)

47851. RHODODENDRON CAMELLIAEFLOREM Hook. f. Ericaceæ.**Rhododendron.**

A Himalayan rhododendron, 2 to 6 feet tall. It has very thick deep-green leathery leaves and pure white or faintly pinkish flowers about 1½ inches wide. (Adapted from *Curtis's Botanical Magazine*, pl. 4932.)

47831 to 47858—Continued.**47852. RHYNCHOTECHUM VESTITUM Wall. Gesneriaceæ.**

An erect, simple, shrubby plant, about 3 feet high, with yellow-hairy, elliptic leaves 9 inches in length, many-flowered axillary cymes of rose-purple flowers, and globose, glistening-white berries more than a quarter of an inch in diameter. The plant is a native of Sikkim, Bhutan, and Assam, India. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 373.)

47853. RUBIA SIKKIMENSIS Kurz. Rubiaceæ.

A stout, handsome, creeping plant, native to Sikkim and Bhutan, India. The stem and root of this plant yield the brilliant red dye used by the natives of Naga Hills and Manipur, India. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 577.)

47854. SALIX TETRASPERMA Roxb. Salicaceæ.**Willow.**

This willow is a native of India, where it grows at altitudes of 2,000 to 7,000 feet and reaches a height of 40 feet. The twigs are useful for basketry, and the foliage as forage. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 488.)

47855. TERMINALIA MYRIOCARPA Huerck and Muell. Arg. Combretaceæ.

A very large evergreen tree, abundant in the subtropical valleys of Sikkim and Bhutan, India. The heartwood is brown, beautifully mottled with dark streaks, and is used for building purposes and for boxes. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 37.)

47856. TERMINALIA TOMENTOSA (Roxb.) Wight and Arn. Combretaceæ.

A large deciduous tree, 80 to 100 feet tall, common throughout the moister parts of India. It yields copiously a transparent gum which is eaten by the Santals. The bark is used for tanning. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 37.)

47857. URARIA LAGOPUS DC. Fabaceæ.

A woody, densely caespitose, perennial leguminous plant, reaching 10 to 12 feet in height, with trifoliolate leaves and copious terminal and axillary racemes of purple flowers. It is a native of India from the Punjab to Assam. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 156.)

47858. WALLICHIA DENSIFLORA Mart. Phœnicaceæ.**Palm.**

A palm with a very short stem or even stemless, found throughout the tropical Himalayas from Kumaon eastward. The leaves are 8 to 10 feet long, the spathes are purple, and the male and female flowers are yellow and purplish, respectively. The dull-purple fruits are about half an inch in length. The leaves are sometimes used for fodder, and also for thatching. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 299, and *Hooker, Flora of British India*, vol. 6, p. 419.)

47859. AMARANTHUS PANICULATUS L. Amaranthaceæ. Huauhtli.

From the City of Mexico, Mexico. Presented by Dr. A. L. Herrera, Director de Estudios Biológicos. Received June 30, 1919.

"Seeds of the edible plant popularly called *alegría*, cultivated in the Federal District." (Herrera.)

The seed is roasted or popped, ground into meal, and made into sweet cakes. The meal is also said to be eaten with sugar and milk.

For previous introduction see S. P. I. Nos. 45811 and 46310.

47860. AMHERSTIA NOBILIS Wall. Casalpiniaceæ.

From Sibpur, near Calcutta, India. Presented by the curator, Royal Botanic Garden. Received June 30, 1919.

Named in honor of Lady Amherst. A medium-sized tree, native to Burma, and considered the most beautiful of all flowering trees. Its immense condalabrumlike sprays of red and yellow flowers drooping from every branch among the handsome foliage present an appearance of astonishing elegance and loveliness. It is in flower during the greater part of the year, but its chief flowering season in Ceylon is from January to April, i. e., the dry season. It produces seed very scantily anywhere, a pod or two occasionally being all that can be obtained, and even these are often infertile. Propagation by layering, therefore, has to be adopted. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 291.)

47861 to 47864. CITRUS spp. Rutaceæ.

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Plant-Breeding Station. Received June 30, 1919.

47861. CITRUS GRANDIS (L.) Osbeck.

Pummelo.

(*C. decumana* Murr.)

47862. CITRUS sp.

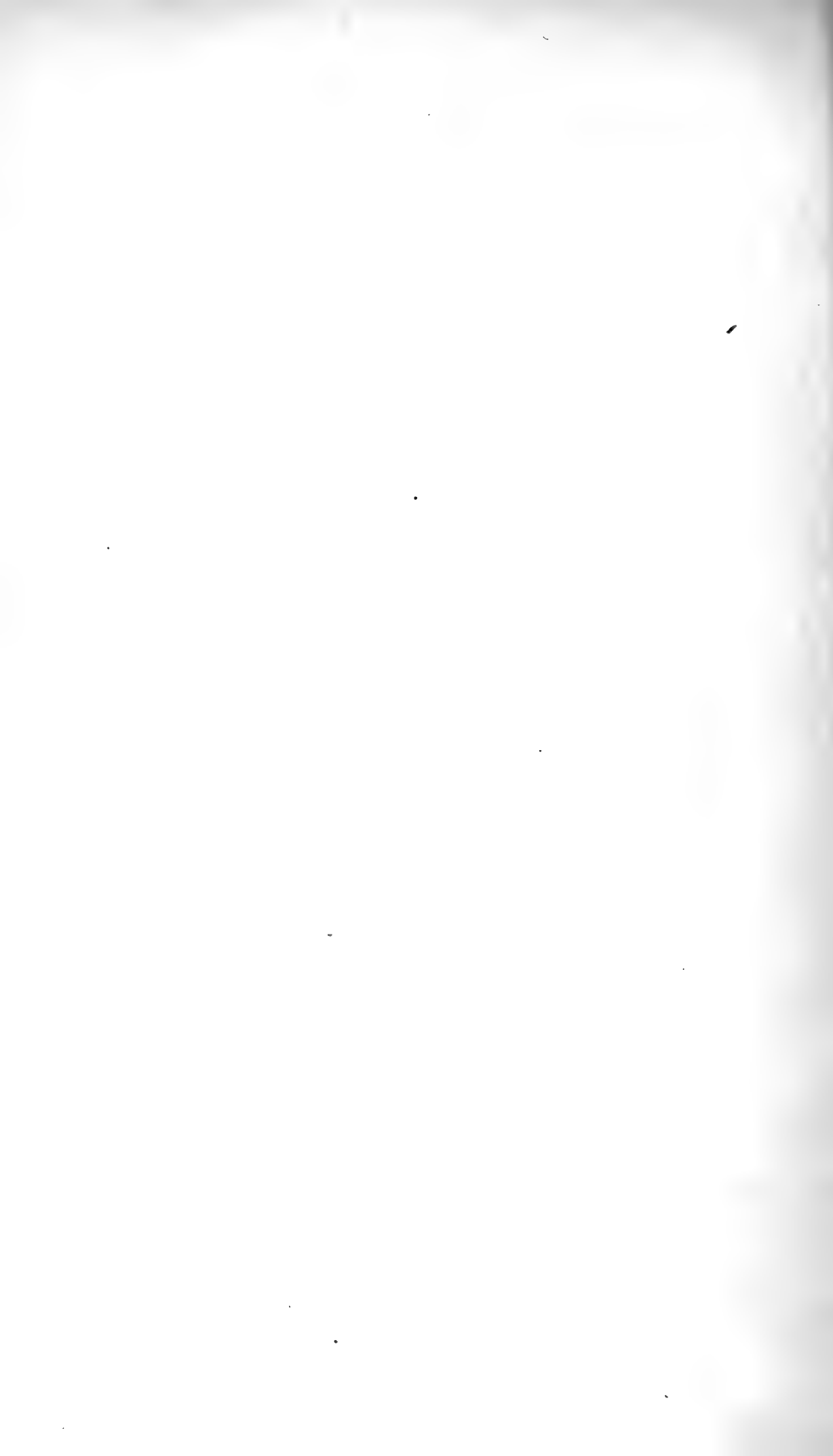
Djeroek nipis.

47864. CITRUS sp.

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47863. CITRUS sp.

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Issued July, 1922.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JULY 1
TO OCTOBER 31, 1919.

(No. 60; Nos. 47865 to 48426.)



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1922.

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INTRODUCTORY STATEMENT.

There are many experimenters who appear not to understand the problem of plant introduction and who, after applying for interesting plants which they see described and finding none left for distribution, since others who applied previously had received them, become discouraged. It should be pointed out that obtaining plants from out-of-the-way parts of the world is a very different thing from the purchase of plants from a nursery. We may through a traveler, a transient correspondent, or one of our own explorers get a small quantity of seed of a rare tree, for example. We often can not get more seed of this species, even by going to very great expense, as it may be found in some out-of-the-way place and may fruit very infrequently. If it can be grown only from seed and the trees do not bear until they are 8 or 10 years old, we simply can not supply more than the number of plants grown from the original introduced seeds until, years later, either the seedlings fruit in this country or a rare opportunity occurs whereby we may obtain it again from its foreign source. The most constructively helpful experimenters are those who appreciate these conditions and who, when they can not get what they want, are glad to test other introductions which we can send them.

This sixtieth inventory has a number of noteworthy new introductions.

Mr. Maiden, of Sydney, sends in a "native cherry" tree (*Exocarpus cupressiformis*, No. 47866) which produces fruit morphologically similar to the cashew nut and the raisin tree, the pedicel below the seed instead of the parts surrounding it being enlarged.

Dr. da Costa sends from Para the pupunha palm (*Guilielma speciosa*, No. 47868) which apparently resembles the pejibaye of Costa Rica, producing a fruit which is boiled and eaten like potatoes. These species of *Guilielma* deserve especial study by tropical horticulturists.

Mr. Wragge sends a quantity of seed of the nikau palm from New Zealand (*Rhopalostylis sapida*, No. 47878), which, it is noted, stands grass fires well and therefore ought to be adapted for naturalization in southern Florida, where the species grows well. Mr. Wragge also sends in seeds of the puriri (*Vitex lucens*, No. 47881), a valuable timber tree from the North Island, where it is known as the "New Zealand oak" because of the strength and durability of its wood.

Dr. Trabut sends from Algeria seeds of a good pasture grass (*Oryzopsis miliacea*, No. 47898) growing on saline soils.

S. P. I. No. 47899 records the success made in Cuba by Irving L. Ward with one of our introductions, *Gonolobus edulis* (No. 35249), which bears soft green fruits that are of good quality when baked or when fried like eggplant.

Dr. Johnson sends seeds of the Guatemalan lignum-vitæ (*Guaia-cum guatemalense*, No. 47900), which Wilson Popenoe says is a beautiful flowering tree remaining in bloom from late February or early March for several weeks. It has proved adapted to growth in southern Florida and will add a feature to the landscape.

Mr. Tacea, of Yucatan, sends seeds of the *Jatropha curcas* (No. 47916) with the report that, although commonly supposed to be a purgative, the nuts are eaten there commonly, even being made into confectionery. A recent careful analysis by Dr. Power of the seeds of this *Jatropha* from trees grown in Florida failed to reveal any substantial quantity of the purgative substance, and tests on animals produced negative results. If its seeds may be used as table nuts, this tree will be a valuable addition to the food plants of southern Florida, since it grows very luxuriantly there and bears abundantly.

Mr. Poynton has furnished the seeds of the kauri pine of New Zealand (*Dammara australis*, No. 47917), one of the greatest timber trees of the world and one of the most stately of all forest trees. Every effort should be made to grow it in America.

Through Anderson & Co., of Sydney, Australia, we have imported seeds of a thin-shelled variety of the macadamia or Queensland nut (*Macadamia ternifolia*, No. 47918). Since this species is fruiting well in southern Florida, a thin-shelled variety will add new interest to its possibilities.

Citrus webberii (No. 47919) is the name given by Wester to what he declares is the largest loose-skinned citrus fruit in the world, coming from Cotabato in the Philippine Islands.

The burakan (*Ipomoea nymphaeaeifolia*, No. 47920) is, according to Wester, a most gorgeous morning-glory, producing great masses of bright-yellow flowers.

Mr. H. R. Wright, of Auckland, who has sent us some very interesting new deciduous fruit varieties, now sends in a new seedling

of the Washington Navel orange (No. 47931) called Dunning's Seedless, which is reported in Queensland to be better than its parent.

Asst. Surg. Gen. Carter has obtained from Guayaquil, Ecuador, seeds of the naranjilla (*Solanum quitoense*, No. 47951), bearing fruits the size of a mandarin orange which have a very acid flavor and are used there for ice creams and cold drinks.

Mr. J. Burt Davy sends from the Transvaal the buchu (*Barosma betulina*, No. 47953), a shrub which, according to the description, vies with the gardenia as an ornamental, having starlike purple flowers. There are two species, both of which furnish the barosma camphor of commerce.

Mr. Milo Baker, of Los Angeles, sends budwood of a species of Casimiroa (No. 47957). Since interest in this new fruit tree is growing in California and Florida, the collecting into a single orchard of all the known varieties and species is the next logical step in its development.

Dr. da Costa has presented us with the seeds of an important oil palm (*Oenocarpus bataua*, No. 47965), native to the Amazon region, which yields an oil scarcely distinguishable from olive oil, and the ucuúba (*Virola sebifera*, No. 47966), a bush that, according to Lange, bears great quantities of nuts rich in oily substances.

Dr. Bertoni sends in from Paraguay, the home of the feijoa, a new fruit tree of the myrtle family (*Britoa sellowiana*, No. 47968), about which little seems to be known in this country. He also presents a species of Solanum (*S. chacoense*, No. 47972) which is closely related to the potato and which he remarks is not attacked there by any insect or disease. He suggests that it may be useful to potato breeders.

The success at Del Monte, Calif., of the yang mei (*Myrica rubra*) is worth especial mention, and Mr. T. Lee, to whom is due its success there, has sent seeds (No. 48000) of this valuable Chinese fruit tree, which he collected from his own trees. There are few handsomer fruits in the world than this yang mei.

Dr. Cramer, the plant breeder of Java, has sent a collection of seeds from selected strains of the West African oil palm (*Elaeis guineensis*, Nos. 48001 to 48010) and seeds of the *Mimusops kauki* (No. 48011), which has fruits flavored like those of the sapodilla (*Achras zapota*) and prefers situations near the sea and so may be valuable for the Miami beaches.

Mr. Day, of Rio de Janeiro, furnishes seed of a variety of Job's-tears (*Coix lacryma-jobi*, No. 48012) which produces on low moist or marshy soils large crops of good fodder and may prove adapted to use on the Everglades.

Mr. Gossweiler, of Angola, Portuguese West Africa, has sent in a very interesting new summer vegetable (*Rumex abyssinicus*, No.

48023) called the Abyssinian Rumex. Its very vigorous growth and production of great masses of leaves of most delicate texture make it a very promising new vegetable for all-summer culture.

From Dr. Proschowsky, of Nice, France, who has sent in so many interesting plants, we have received seeds of *Casuarina deplancheana* (No. 48026), which is native to New Caledonia and deserves trial in Florida. It is new to this country. He also sends a new and very rare climber (*Semele androgyna*, No. 48032) and a remarkable species of Albizzia (*A. lophantha*, No. 48034) from southwestern Australia, which produces on its roots bacterial nodules weighing as much as 2 pounds.

Through the generosity of M. Jules Goffart, of Tangier, whose collection of acacias is noted, we have received 39 species of acacias (Nos. 48035 to 48073). The beauty of the flowers and the usefulness of the trees for street and sand-dune plantings and as furnishing valuable woods, tannins, gums, and other material make this a very valuable gift.

Through Dr. Koningsberger, of the Buitenzorg Garden, there has come in a quantity of seed of a variety of the well-known Job's-tears, called djali bras (No. 48081), which can be grown anywhere in the Tropics and which, unlike the ordinary Job's-tears, has seeds with thin soft shells. These when cooked whole, like rice, or ground into meal are said to make an excellent food. A new tropical grain crop like this deserves study.

Dr. Galloway calls attention to a promising new rose (*Rosa coriifolia*, No. 48086) which has been used by Dr. Van Fleet as a stock because of its vigor, hardiness, upright smooth stems, and lack of suckers.

Metrosideros tomentosa (No. 48151) from New Zealand, according to Mr. Hallet, is covered with crimson flowers in summer. Its spreading nature and its ability to withstand salt spray and to stand as much frost as the lemon may make it an excellent windbreak for the Florida seacoasts.

A wild persimmon (No. 48162) from Puerto Bertoni, Paraguay, which may be useful for stocks or for breeding purposes, is sent in by Mr. Bertoni.

Entelea arborescens (No. 48165), which grows along the north coast of New Zealand, produces very light wood, about half the weight of cork. Mr. Wright, who sends in seeds, says it is one of the handsomest of small trees. The large drooping clusters of pure-white flowers, which are an inch in diameter, ought to attract the attention of some one who lives where it can be grown. Has its wood ever been compared with balsa wood?

Mr. Alfred Bircher, of Matania el Saff, Egypt, sends in seeds of *Eugenia aquea* (No. 48223), a myrtaceous tree which bears fruits the size of loquats with an aromatic flavor.

Mr. J. F. Rock, of Honolulu, during a hurried trip to Siam, sent back seeds of the *Hydnocarpus anthelminthica* (Nos. 48227 and 48228), which yields one of the oils used in the treatment of leprosy.

Mr. J. Burt Davy has sent from Victoria Falls, Rhodesia, a remarkable collection (Nos. 48230 to 48261) of seeds of the timber trees and of the ornamental trees and shrubs of that region; among them are the Rhodesian mahogany, Rhodesian teak, mukwa, Zambezi almond, and the gum-copal tree. It is hoped that some of these may be valuable for the reforestation work being carried on by the Hawaiian Sugar Planters' Association on the mountain areas of the Hawaiian Islands.

It is strange that a potherb like *Basella rubra* (No. 48262) should be in almost universal use in Bengal and practically unknown as such in America, though it grows and forms an attractive screen in our Southern States. Can there be different strains of it, or have we failed to learn to like it or to prepare it properly?

It is to be hoped that the common bamboo of northern Bengal (*Dendrocalamus hamiltonii*), which grows to 80 feet in height and furnishes edible shoots and valuable timber, will prove hardy enough for our Southern States. Seeds of this (No. 48266) were sent us by Col. A. T. Gage, of Darjiling, India, who at the same time sent seeds of *Dillenia pentagyna* (No. 48267), the flower buds and fruits of which are edible. Since *Dillenia indica* has fruited on Mr. George B. Cellon's place at Miami, Fla., it is possible that this other member of the genus will grow in that region.

The tree which furnishes the easily worked wood for tea chests and which grows at altitudes of 3,000 feet (*Duabanga sonneratioides*, No. 48268) would probably be a valuable addition to the forest trees of Porto Rico and Hawaii; and, since its seeds germinate readily, it may prove adaptable for forest purposes.

Maesa chisia (No. 48272), which covers large areas of the Darjiling Hills and according to Gamble affords ideal protection to planted trees, may prove of use in the reforestation work in Hawaii.

Subtropical species of *Prunus* may play a rôle in the stock problem of our Southern States, and *Prunus cerasoides* (No. 48276), a large tree often cultivated in the Himalayas, is worthy of investigation.

The yellow-fruited raspberry, which, according to Gamble, is one of the best wild fruits of India, can not fail to interest the breeders of the genus *Rubus*. Seeds of this *Rubus* (*R. ellipticus*, No. 48278) were sent us by Col. Gage.

Since the beautiful grass *Thysanolaena agrostis*, which the writer sent from Poona in 1902, has been established near Orlando, Fla., by Mr. Nehrling, its relative *T. maxima* (No. 48279) certainly should be tried there.

Through the kindness of Mr. H. J. Elwes, the well-known authority on British trees, we have received a most valuable collection of 123 species of mostly ornamental trees, shrubs, and plants (Nos. 48304 to 48426) made by the distinguished explorer of western China, Mr. G. Forrest. These include 2 species of *Buddleia*; *Lonicera henryi*, distinguished by being one of the 3 evergreen-leaved vines which are hardy in Boston; 12 species of *Meconopsis*, the so-called "blue poppy" of western China, which is so beautiful but so difficult to grow anywhere; 48 species of Chinese *Primulas*, some still undescribed; 3 species of *Pyrus*; 12 species of *Rubus*; and the new mountain ash, *Sorbus vilmorini*, from Yunnan.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels; and the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory, as of all other publications of this office. The manuscript has been prepared by Miss Esther A. Celandier.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., October 6, 1921.

INVENTORY.¹

47865. *ARACHIS HYPOGAEA* L. Fabaceæ.

Peanut.

From Rio de Janeiro, Brazil. Presented by Capt. Amilcar A. B. Magalhaes, Comissão de Linhas Telegraphicas Estrategicas de Matto Grosso ao Amazonas. Received July 1, 1919.

"Peanuts grown by Mr. R. G. Reidy on his property, 'Cascatinha,' 500 meters above sea level, at the station called Martins Costa, on the Central Railway of Brazil, State of Rio de Janeiro. The original seed, from the wilds of Matto Grosso, where it was grown by the Indians, was given to Mr. Reidy by the Comissão in 1918 and is understood to have been selected for its very large size. The specimens sent are reduced in size, but are still much larger than the common peanut of Matto Grosso. Mr. Reidy stated that the development of the crop was retarded by damage resulting from floods. The product shows a marked modification in coloration." (*Magalhaes*.)

47866 and 47867.

From Sydney, Australia. Presented by Mr. J. H. Maiden, director, Botanic Gardens. Received July 2, 1919.

47866. *EXOCARPUS CUPRESSIFORMIS* Labill. Santalaceæ.

Native cherry. A small tree about 20 feet high with very numerous green, wiry branches, sometimes collected in a dense conical head, sometimes loose and pendulous at the ends. The leaves are reduced to tiny alternate scales. The flowers are small, in terminal spikes, and soon fall off, except one in each spike; after fertilization this one is raised on an obconical pedicel which thickens to a diameter of one-fourth of an inch and is red and succulent. The fleshy edible pedicel, under the small, dry, globular fruit, has been likened to a cherry with the stone outside. The close-grained, handsome wood is used for turning and cabinet purposes. (Adapted from *Bentham, Flora Australiensis*, vol 6, p. 229, and *Maiden, Useful Native Plants of Australia*, pp. 50 and 534.)

47867. *TIMONIUS RUMPHII* DC. Rubiaceæ.

A tall shrub or small tree, with small drupes which have much the appearance of the crab or wild apple of Europe. The wood is light in color, close grained, and suitable for lining boards; it is easily worked and resembles somewhat the English sycamore. (Adapted from *Maiden, Useful Native Plants of Australia*, pp. 63 and 607.)

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases undoubtedly be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

47868 and 47869.

From Para, Brazil. Presented by Dr. J. Simao da Costa. Received July 3, 1919.

47868. *GUILIELMA SPECIOSA* Mart. Phœnicaceæ.
(*Bactris gasipaes* H. B. K.)

Palm.

"*Pupunha*. Seeds of our *Guilielma speciosa*. The trees grow in clusters and are very graceful. The fruit, borne in large bunches, is edible. The natives prefer to boil it and eat it with cane sirup, but Europeans domiciled here have learned to eat the fruit boiled like the ordinary side dishes composed of all sorts of vegetables, as potatoes, yams, etc. The seeds yield an oil of very good quality, but in such small proportions that no one has ever attempted its extraction on a commercial scale." (*Da Costa*.)

For an illustration of this tree, see Plate I.

47869. *MAURITIA ARMATA* Mart. Phœnicaceæ.

Palm.

"*Carana*. Seeds of *Mauritia armata*, from the fleshy pericarp of which a wine is made. The inner portion is a vegetable ivory as hard as that from *Phytelephas macrocarpa*. As the fruit is very small the buttons made are also much smaller than can be made from other vegetable ivories." (*Da Costa*.)

47870 and 47871.

From Bogota, Colombia. Presented by Mr. M. T. Dawe. Received July 7, 1919.

47870. *ACHRADELPHA MAMMOSA* (L.) O. F. Cook. Sapotaceæ. **Sapote.**
(*Lucuma mammosa* Gaertn.)

"A rich-colored variety of sapote, which is also of excellent flavor." (*Dawe*.)

47871. *ANNONA MURICATA* L. Annonaceæ.

Soursop.

"This is a yellow-seeded form and may be a distinct species." (*W. E. Safford*.)

47872. *PHASEOLUS VULGARIS* L. Fabaceæ.

Common bean.

From Trujillo, Peru. Presented by Mr. A. M. Lynch. Received July 7, 1919.

Nuña. Seeds white, nearly spherical, about three-eighths of an inch in diameter.

47873. *PHASEOLUS VULGARIS* L. Fabaceæ.

Common bean.

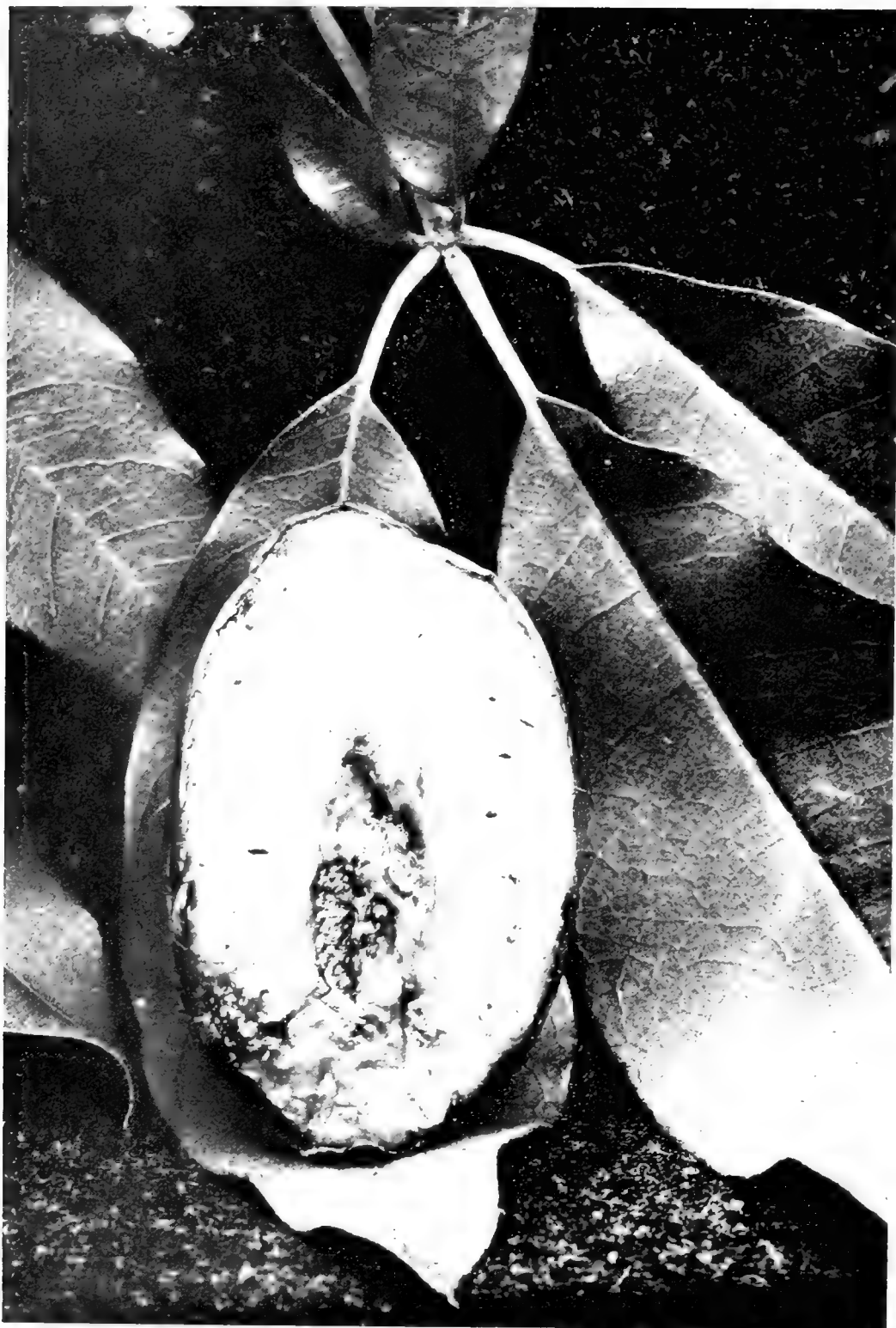
From North Rose, N. Y. Presented by Mr. O. S. Weed. Received July 7, 1919.

"In 1917 I made several crosses between the blightless *Red Kidney*, *Marrow*, *Pea* bean, and *Yellow Eye*. In 1918 I again planted these crosses and the results were really marvelous in the vast numbers of peculiar beans obtained. I am sending you a few of the hybrids." (*Weed*.)



A PALM WHICH RIVALS THE BANANA AS A FOOD PRODUCER. (GUILIELMA SPECIOSA MART., S. P. I. No. 47868.)

The pupunha, which grows wild in the Amazon Valley of Brazil, produces large bunches of yellow fruits the size of an apricot. When boiled, these fruits have somewhat the texture and flavor of the chestnut and are of high food value. The plant, which is perhaps not specifically distinct from the pejibaye of Costa Rica (though the latter is usually considered to be *G. utilis*, not *G. speciosa*), should be cultivated throughout the Tropics. (Photographed by P. H. Dorsett at the Botanical Garden, Rio de Janeiro, Brazil, January 1, 1914; P14589FS.)



A SEEDLESS WHITE SAPOTE. (CASIMIROA SP., S. P. I. No. 47957.)

When undertaking the improvement of a cultivated fruit, one of the chief aims of horticulturists seems to be the development of seedless forms. The above illustration shows a seedless white sapote, grown by Mr. I. L. Collins at Orange, Calif. It is not rare for trees of this species to produce such fruits, but it is not yet certain that grafting or budding will perpetuate the characteristic; it is quite possible that seedlessness, in this species, may often be due to defective pollination. (Photographed by David Fairchild, Orange, Calif., October 10, 1919. P25706FS.)

47874 to 47876.

From Bogota, Colombia. Presented by Mr. W. O. Wolcott. Received July 9, 1919.

47874. ANNONA MURICATA L. Annonaceæ.**Soursop.**

"The soursop, known in Spanish-speaking countries as guanábana, sometimes shortened to guanaba, is unexcelled for sherbets and refreshing drinks. Like other anonas, however, it does not always fruit abundantly when grown from seed, and it will be necessary to establish named varieties, propagated vegetatively, before soursop culture can become the basis of an industry.

"The fruit is oblong, sometimes 4 or 5 pounds in weight, dark green, and prickly on the surface. The flesh is white and cottony or tough in texture, so that it is not good to eat out of hand. But it has a rich, aromatic, and perfectly delicious flavor, and when mixed with milk it makes one of the best drinks of the Tropics—the champola of Havana restaurants and cafés.

"The tree is tropical in its requirements and can be grown in the United States only in the southern part of Florida, approximately the area between Palm Beach and Punta Gorda on the north to Key West on the south. It is small, rarely attaining more than 20 feet in height, and has thick glossy leaves and large greenish flowers. It may be mentioned that the pollination of the anonas has never been studied sufficiently, and it is probable that their productiveness may be increased by attention to this subject. Mr. P. J. Wester and others have shown that most species are dependent upon cross-pollination, and if the insects which normally effect this are not present something will have to be done to insure its being accomplished." (*Wilson Popenoe.*)

47875. ANNONA SQUAMOSA L. Annonaceæ.**Sugar-apple.**

"The sugar-apple, usually known in Spanish-speaking countries as *anona* or *anón*. This is one of the best of the anonas for strictly tropical regions, and it can even be grown where there are light frosts. It is too tender, however, for cultivation in California. In Florida it succeeds as far north as Cape Canaveral, though it is not commonly grown north of Palm Beach. It is more productive than several of the other anonas, especially when grown in a rather dry climate.

"The sugar-apple is a small tree, sometimes not attaining more than 12 or 15 feet in height, and rarely more than 20 feet. Its fruits are the size of apples and suggest pine cones in general appearance, whence the name 'pinha' which is used in Brazil. When fully ripe the fruit is soft and the carpels separate readily, exposing the snow-white, delicately flavored pulp. Like the cherimoya, the sugar-apple is eaten out of hand; it resembles the cherimoya in flavor, but has less acidity and is not, therefore, quite so delicious.

"The plant is widely distributed throughout the Tropics. It has become naturalized in parts of India and is highly esteemed in that country as a fruit. The Anglo-Indians call it 'custard-apple,' but this name is applied to all anonas without discrimination and leads to confusion. The Hindus have named it 'sharifa,' meaning noble, and 'sitaphal,' the fruit of Sita, one of their gods.

"In short, the sugar-apple is one of the important fruits of the Tropics. It is particularly adapted to dry regions, but does not withstand more

47874 to 47876—Continued.

than a few degrees of frost and is successful only in regions which rarely experience temperatures below freezing." (*Wilson Popenoe.*)

47876. SOLANUM QUITOENSE Lam. Solanaceæ.

Naranjilla.

A hairy-leaved unarmed shrub, 4 to 8 feet in height, bearing large quantities of small, acid, peculiarly fragrant fruits which the Spaniards call "Quito oranges" because of their size, appearance, and flavor. They are used for salads and preserves and for making cooling drinks and ices; a little of the juice is used in the preparation of the tea called maté.

For previous introduction and description, see S. P. I. No. 42034.

47877. COSTUS SPECIOSUS (Koen.) J. E. Smith. Zinziberaceæ.

From Oneco, Fla. Plants purchased from Reasoner Bros. Received July 11, 1919.

One of the most elegant plants of this family; its stout, spirally twisted stem carries its glossy leaves and dense, showy, white-flowered spike above the brushwood in the Indian tropical jungles. It is common everywhere in India, and especially in Bengal, where it frequents moist, shady places. The tuberous, horizontal rootstock yields 24 per cent starch, and in Ceylon the poorer natives use it for food, but it is not cultivated. In some parts of India the tuber is cooked in sirup and made into a preserve. It is also used as a substitute for ginger. (Adapted from *Watt, Dictionary of the Economic Products of India*, p. 279; *Hooker, Flora of British India*, vol. 6, p. 249; and *Chevast, C. Congrès d'Agriculture Coloniale, Gouv. Gen. de l'Indo-Chine, Hanoi series, No. 2, 1918.*)

47878 to 47881.

From Auckland, New Zealand. Presented by Mr. Clement L. Wragge, Waiata Botanic Garden, Birkenhead. Received July 11, 1919.

47878. RHOPALOSTYLIS SAPIDA (Soland.) Wendl. and Drude. Phœnicaceæ.
(*Areca sapida* Soland.) **Nikau palm.**

This elegant and graceful palm, found usually in thick brush, is the only species of this family represented on the mainland of New Zealand. The tree is sometimes 30 feet in height, with a smooth, polished, ringed, green stem and pinnate leaves 14 feet in length. Each tree bears two or three spathes, 13 inches long, which inclose the flower buds. The white flowers, sessile on a thick, fleshy, white axis, are followed by ovoid drupes, half an inch in length, which are a vivid red when ripe and look like a huge bunch of coral. The fruits are extremely hard and have been used for shooting birds. Although so hard, they are much relished by the wild parrots. The leaf strips are much used by the Maoris for weaving into baskets and kits of every description. The leaves are used in the construction of the native huts; a framework is made of manuka sticks, and the roof and walls of palm leaves which form a water-tight covering. The top of the stem is fleshy and juicy and is sometimes eaten. The nikau palm will stand fire almost as well as the cabbage tree (*Cordyline australis*). After a big bush fire most of the trees are killed, except the nikaus, the cabbage trees, and the fern trees. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 84.)

47878 to 47881—Continued.

47879. *COPROSMA LUCIDA* Forst. Rubiaceæ.

A shrub about 15 feet in height, with leathery, glossy bright-green leaves, 2 to 5 inches long. The inconspicuous flowers are wind-pollinated. The plant is often cultivated in gardens for the beauty of its small berry-like drupes which are brilliant orange-red. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 392.)

47880. *STYPHELIA ACEROSA* (Gaertn.) Laing and Blackwell. Epacridaceæ.
(*Cyathodes acerosa* R. Br.)

Mingi-mingi. A shrub or small tree with blackish branches and rigid, pungent, needle-shaped leaves about half an inch in length, with recurved margins and three to seven parallel veins on the under surface. The small flowers, appearing in October and November, have whitish funnel-shaped corollas and form small white or red drupes. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 328.)

47881. *VITEX LUCENS* Kirk. Verbenaceæ. Puriri.

A fine tree, from 50 to 60 feet in height, native to New Zealand but restricted to the northern part of the North Island. It is often called the New Zealand oak, on account of the strength and durability of its wood, which is not injured by damp or exposure and is therefore extremely valuable for shipbuilding purposes. The logs are often perforated with holes, the work of a soft-bodied grub which develops into the puriri moth. These holes do not affect the timber, except in so far as it has sometimes to be cut to disadvantage. The handsome, bright glossy-green leaves are 3 to 5 foliolate with leaflets 3 to 4 inches long. The pink or red 2-lipped flowers, produced more or less all the year round, are in clusters of four to eight in axillary panicles. The roots of the puriri never penetrate deeply into the ground but lie near the surface, so the tree is easily blown over in a gale. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 350.)

47882 to 47894.

From La Moncloa, Madrid, Spain. Presented by Sr. José Hurtado de Mendoza, director, Estación de Ensayo de Semillas. Received July 12, 1919.

47882 to 47884. *TRITICUM AESTIVUM* L. Poaceæ. Common wheat.
(*T. vulgare* Vill.)47882. *Mocho colorado.* 47884. *Toledo sin barbas.*47883. *Rabón.*47885 to 47893. *TRITICUM DURUM* Desf. Poaceæ. Durum wheat.47885. *Blanca de Nulas.* 47890. *Raspinegro.*47886. *Caña maciza.* 47891. *Rubio entrelargo del Montijo.*47887. *Carita de ratón.* 47892. *Rubio candeal.*47888. *Enano de Jaen.* 47893. *Semental.*47889. *Granadino.*47894. *TRITICUM TURGIDUM* L. Poaceæ. Poulard wheat.
Baza.

47895 to 47897.

From Montevideo, Uruguay. Presented by Sr. R. S. Silveira. Received July 15, 1919.

47895. *HELIANTHUS ANNUUS* L. Asteraceæ.

Sunflower.

"Seeds of a Russian variety grown in this country." (*Silveira.*)

47896 and 47897. *RICINUS COMMUNIS* L. Euphorbiaceæ. **Castor-bean.**

47896. The ordinary variety with small gray seeds.

47897. Var. *sanguineus*, with large reddish seeds.

47898. *ORYZOPSIS MILIACEA* (L.) Benth. and Hook. Poaceæ.

Grass.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received July 16, 1919.

"I am sending seeds of *Oryzopsis miliacea*, an indigenous grass which is quite resistant in saline situations and forms a good pasturage in such places." (*Trabut.*)

47899. *GONOLOBUS EDULIS* Hemsl. Asclepiadaceæ.

From La Gloria, Cuba. Presented by Mr. Irving L. Ward. Received July 17, 1919.

"Seeds which I grew from S. P. I. No. 35249 sent me from Washington, June 12, 1913. The soft, green fruits are very good when fried like eggplant. They are also delicious baked, after being peeled and boiled until tender in a little water; they should be baked only long enough to dry off the water." (*Ward.*)

47900. *GUAIACUM GUATEMALENSE* Planch. Zygophyllaceæ.

Guayacan.

From Zacapa, Guatemala. Collected by Dr. F. S. Johnson. Received July 19, 1919.

"The *guayacan*, sometimes called by Americans *lignum-vitæ*, is found in abundance upon the plains of the lower Motagua valley, in the vicinity of El Rancho, Zacapa, and other towns. It is a small tree, sometimes attaining 30 feet in height, usually somewhat spreading in habit, with a trunk sometimes gnarled and twisted and having slender branches. The leaves are small and delicate. Toward the end of the dry season, i. e., in February or March, the tree comes into flower and is then a mass of lavender-purple, distinguishable for long distances across the plains. It remains in bloom for several weeks.

"The wood is exceedingly hard. Though difficult to work, it is of value for cabinet purposes. The heartwood is rich brown in color, while the sapwood which surrounds it is light yellow. Both take a fine polish.

"The tree thrives in a warm climate, with little rainfall. The soil upon which it grows is often rocky and poor. Whether it will stand any frost can not be stated, but it seems likely that it may succeed in parts of California, Arizona, and perhaps Florida. It should be given a trial as an ornamental." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 44858.

47901. CANARIUM OVATUM Engl. Balsameaceæ. Pili nut.

From Manila, Philippine Islands. Presented by Mr. Adn. Hernandez, Director of Agriculture. Received July 19, 1919.

This Philippine species is becoming known in the United States through the shipments of nuts which have reached many of our large markets in recent years. It is described by P. J. Wester as a tree about 50 to 80 feet high, adapted to a moist climate with abundant rainfall.

"The fruit is black, smooth, and shining, and contains one seed, the 'pili nut,' inclosed in a fleshy husk which is edible when cooked. The nuts are oblong, triangular, and pointed at both ends; the kernel is of excellent quality. It is rarely cultivated. While the pili occurs in several other provinces, all the nuts marketed are obtained in Sorsogon, Albay, and Ambos Camarines." (*Philippine Agricultural Review*, vol. 9, p. 242.)

"Since the tree is strictly tropical in its requirements (so far as known), it probably will not succeed in the United States unless it be in extreme southern Florida. It should be tried in Porto Rico, Cuba, and other parts of the American Tropics." (*Wilson Popenoe*.)

47902 to 47910. MANIHOT ESCULENTA Crantz. Euphorbiaceæ. Cassava.

(*M. utilisissima* Pohl.)

From Port of Spain, Trinidad, British West Indies. Cuttings presented by Mr. W. G. Freeman, Acting Director of Agriculture. Received July 22, 1919.

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| 47902. " <i>Maman l'enfant</i> ." | 47907. " <i>No. 12</i> ." |
| 47903. " <i>Manioc Sellier</i> ." | 47908. " <i>No. 13</i> ." |
| 47904. " <i>Mata Hotel</i> ." | 47909. " <i>No. 14</i> ." |
| 47905. " <i>Parasol</i> ." | 47910. " <i>No. 15</i> ." |
| 47906. " <i>Turkey Claw</i> ." | |

47911 to 47914.

From Buitenzorg, Java. Presented by the director, Plant Breeding Station. Received July 22, 1919.

47911 to 47913. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.

47911. The ordinary form. 47913. Var. *rubra*.

47912. Var. *inermis*.

47914. SESAMUM ORIENTALE L. Pedaliaceæ. Sesame.

A white-seeded variety.

47915. GOSSYPIUM sp. Malvaceæ. Mexican tree cotton.

From Mexico. Presented by Dr. C. A. Purpus, Paso del Macho, Vera Cruz. Received July 22, 1919.

"Capsules of cotton grown here at an altitude of 3,000 feet. The cotton trees reach a height of 10 to 12 feet and flower and fruit throughout the year." (*Purpus*.)

47916. JATROPHA CURCAS L. Euphorbiaceæ.

From Madda, Yucatan, Mexico. Presented by Mr. Alberto Tacea. Received July 23, 1919.

"Seeds of this plant are usually regarded as purgative, yet in this locality they are eaten and are used for confectionery." (*Tacea*.)

47917. DAMMARA AUSTRALIS Lambert. Pinaceæ. Kauri pine.
(*Agathis australis* Steud.)

From Auckland, New Zealand. Presented by Mr. J. W. Poynton. Received July 23, 1919.

A lofty forest tree, with a rounded, bushy head, usually ranging from 80 to 100 feet high, but it is often of greater size. The trunk varies in diameter from 4 to 10 feet, but occasionally attains 20 feet. The bark is glaucous-gray, falling off in large flat flakes. The sessile leaves are very thick and leathery. The cones are erect, almost spherical when ripe, and 2 to 3 inches in diameter; the broad, thin scales fall away from the axis at maturity. The tree is abundant in the northwestern peninsula of North Island, from sea level up to an altitude of 2,000 feet. The timber is not excelled by any other for the variety of uses for which it is adapted, and is remarkable for its strength, durability, and the ease with which it is worked. The resin, or *kauri gum*, so important for making varnish, is still dug in large quantities on the sites of previous forests, or obtained from those still living. (Adapted from *Cheeseman, Manual of the New Zealand Flora*, p. 645.)

For previous introduction, see S. P. I. No. 46387.

47918. MACADAMIA TERNIFOLIA F. Muell. Proteaceæ. Macadamia.

From Sydney, Australia. Purchased from Anderson & Co. Received July 24, 1919.

"Nuts of the thin-shelled variety."

For previous introduction and description, see S. P. I. No. 44769.

47919 to 47925.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received July 24, 1919. Quoted notes by Mr. Wester.

47919. CITRUS WEBBERII Wester. Rutaceæ.

"*Mangapug*. The largest known loose-skinned citrus fruit in the world. It is citron yellow, has 13 to 15 locules, very thin skin, and juicy flesh. It is eaten by the natives in Cotabato. This is apparently a rare form, for I saw no trees anywhere during my stay in Cotabato, although I went as far as to Fort Pikit in the interior. Nowhere did I see any signs of canker, though I was on the lookout for this disease."

47920. IPOMOEA NYMPHAEAEFOLIA Blume. Convolvulaceæ.

(*I. peltata* Choisy.)

Morning-glory.

"*Burakan*. This is a most gorgeous vine with its immense leaves and masses of bright-yellow flowers."

The specific name was originally spelled *nymphaefolia* by Blume and was corrected to *nymphaeaeefolia* in *Index Kewensis*.

47919 to 47925—Continued.

47921. IPOMOEA PES-CAPRAE (L.) Roth. Convolvulaceæ. Morning-glory.
(*I. biloba* Forsk.)

A branching, glabrous, perennial vine with prostrate, succulent stems sometimes 60 feet long. The suborbicular leaves approach 4 inches in width and are notched at the apex. The funnelform flowers, about 2 inches long, are borne during summer and autumn in clusters on a stout peduncle. This is one of the most characteristic plants of the sea beaches of warm and tropical America. (Adapted from *Britton, Flora of Bermuda*, p. 300.)

47922 to 47924. RUBUS spp. Rosaceæ. Bramble.

"These brambles from high altitudes in northern Luzon may do well in Florida."

47922. RUBUS sp.

47924. RUBUS sp.

47923. RUBUS sp.

47925. (Undetermined.)

"*Buol*. This is a plumlike, yellow, acid fruit growing on a spiny, rather attractive shrub near the seashore in Davao and would probably make a good jelly or marmalade."

47926 and 47927. SOJA MAX (L.) Piper. Fabaceæ. Soy bean.

From Dairen, Manchuria. Presented by Mr. A. A. Williamson, American consul. Received July 26, 1919.

These improved varieties have the advantage of containing more oil than other varieties and of being uniform in shape and size. They possess a very fine luster. Furthermore, the growing of these varieties is known to bring in about 15 to 20 per cent greater crop from the same area of land. (Adapted from *Commerce Reports*, March 14, 1919, p. 1232.)

47926. "*Shiheigai-hakka*. (*Ssupingkai*, white flower; or *Supingkai*, small bean.)"

47927. "*Kaigen-hakka*. (*Kaituan*, white flower; or *Kaiyuan*, small bean.)"

47928. BRASSICA BESSERIANA Andrz. Brassicaceæ. Mustard.

From Aden, Arabia. Presented by Mr. Addison E. Southard, American consul. Received July 28, 1919.

"Two kinds of mustard are grown in the Yaffai and Dthala districts of the Aden hinterland and in the Arabian Red Sea districts of Dubham, Shargah, Koraisha, Hojaria, and other places. These two kinds are known in Arabic as *khardal* (or *ghardal*) and *tartar*. The first-named variety yields but little oil, while the latter yields proportionately a good deal of oil. The clerk in this consulate was sent to canvass the Arab families in Aden and Sheikh Othman, with whom he has acquaintance, and succeeded in obtaining from the medicine chest of one old gentleman a few grams of the *khardal* (or *ghardal*) variety, which are herewith inclosed." (*Southard*.)

47929. ANACARDIUM EXCELSUM (Bert. and Balb.) Skeels. **Anacar-**
(A. rhinocarpus DC.) [diaceæ.

From New York, N. Y. Presented by H. P. Finlay & Co., Ltd. Received July 28, 1919.

"Seeds, called *Mijagua*, that come from Venezuela, where they are used as a substitute for Indian corn in the feeding of hogs. These seeds are much cheaper than Indian corn in Venezuela." (H. P. Finley.)

A majestic tree, related to the cashew nut, found at altitudes ranging from sea level to 2,700 feet, in torrid regions. The wood, being hard and heavy, is worked with difficulty, but it is used in making boats and canoes. Fish are very fond of the fruit, and it is stated that in ancient times the Indians in Talamanca used the cut-up bark of this tree to stupefy the fish and thereby to catch them more easily. (Adapted from Pittier, *Plantas Usuales de Costa Rica*, p. 92.)

47930 to 47939.

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received July 28, 1919. Quoted notes by Mr. Wright.

47930. METROSIDEROS TOMENTOSA A. Rich. Myrtaceæ.

"*Pohutukawa*. One of the most beautiful of flowering trees and very valuable as a bee plant; the honey made from this is of excellent flavor and is pure white. This tree, about 40 feet in height, is found on the hillsides, along the beach, and even grows out of the sides of the sea cliffs. In many cases, thriving trees grow just above high-water mark, where the roots are frequently washed by the tide. Like *M. robusta*, it yields a hard wood which is used for making knees for boat building. Strange to say, *M. tomentosa* is found in the wild state only near the sea, although it grows well inland if protected from frost."

For previous introduction, see S. P. I. No. 42852.

47931. CITRUS SINENSIS (L.) Osbeck. Rutaceæ. **Sweet orange.**

"*Dunning's Seedless* (navel orange). Seedling, from the Washington Navel, grown in Queensland, Australia, where it is said to surpass the Washington Navel."

47932. PRUNUS CERASIFERA MYROBALANA (L.) C. Schneid. Amygdalaceæ.

"*Coffee's Myrobalan*. This variety we use for the working of European plums and prunes (*Prunus domestica*). They grow well and make a good union on it. It strikes almost as freely as a willow."

47933 and 47934. PRUNUS SALICINA Lindl. Amygdalaceæ.

Japanese plum.

47933. "*Patterson*. A Satsuma seedling, said to be the latest of plums (yellow flesh)."

47934. "*Purple King*. *Doris* × *Hale*. A large Japanese plum of incomparable beauty, having very firm flesh of good quality. The best of the Japanese section; it surpasses all the other plums in vigor."

47935. PRUNUS sp. Amygdalaceæ.

Hybrid plum.

"*Wilson's Early*. Said to be the earliest hybrid plum grown; an extra good shipper."

47930 to 47939—Continued.**47936.** PRUNUS sp. Amygdalaceæ.

"*Precious*. Hybrid cherry plum. An early bearer and a heavy cropper."

47937. PRUNUS sp. Amygdalaceæ.

"*Early Jewel*. Hybrid Japanese plum. An early plum resembling *October Purple*."

47938. PRUNUS sp. Amygdalaceæ.

"*Morrison's Stock*. Used for the working of Japanese and hybrid plums (not for European). These plums grow very strong on it; and cuttings strike readily, provided they are not planted too late. This variety flowers, but never fruits."

47939. PYBUS sp. Malaceæ.**Pear.**

"*Corona*. *Bartlett* × *Beurre Clairgeau*. Good in quality and very handsome; should make a great commercial variety."

47940. BAUHINIA sp. Cæsalpiniaceæ.

Plants grown at the Yarrow Plant Introduction Field Station, Rockville, Md., from seeds collected by Dr. J. N. Rose, associate curator, National Herbarium. Numbered for convenience in recording distribution.

"No. 22119. August, 1918. This plant was very common on the dry hills above Huigra, Ecuador, associated with cacti, fourcroya and other semiarid plants. It forms a small round bush, about 3 to 4 feet high, with the characteristic 2-lobed leaf of the Bauhinia. The flowers are borne in small clusters of fours or fives and suggest, in a way, small red-flowered fuchsias. The calyx is cut on one side and is pushed off the petals like a spathe. The petals, which are nearly an inch long, are spread only a little at the tip and at first suggest a tubular flower. The plant was seen nowhere else, although it was quite common at Huigra at an altitude of about 4,000 feet. The flowers are so attractive that we believe it might prove a valuable addition to our ornamentals, especially in the semiarid region of the Southwestern States." (*Rose*.)

47941. TRITICUM AESTIVUM L. Poaceæ.**Common wheat.**(*T. vulgare* Vill.)

From Algiers, Algeria. Presented by Dr. L. Trabut. Received August 5, 1919.

"*Fritissi* wheat; harvested south of Tuggurt, Algeria, April, 1919." (*Trabut*.)

"Probably a club wheat of the common type." (*C. E. Leighty*.)

47942. ALEURITES TRISPERMA Blanco. Euphorbiaceæ. **Banucalag.**

From Mayaguez, Porto Rico. Presented by Mr. D. W. May, Porto Rico Experiment Station. Received August 5, 1919.

"You sent us in 1909 seed of *Aleurites trisperma*, under S. P. I. No. 26050. This introduction is producing more seed than *A. fordii* or *A. moluccana*, and I am sending you a bag of it. The plant grows well with us and the seed is easily gathered." (*May*.)

47943 to 47945. ZEA MAYS L. Poaceæ.**Corn.**

From Rio de Janeiro, Brazil. Presented by Capt. Amilcar A. B. Magalhaes.
Received August 5, 1919.

"These ears which we are sending you were obtained here, in the State of Rio de Janeiro, from seeds distributed by this Commission and brought from Matto Grosso to the Corn Exposition held in this capital in 1918. This product is not a perfect reproduction of the original, it being apparent that some kernels have suffered from the influence of common corn which the farmer planted very close to the plat allotted to the pure seed. These kernels are distinguished by a hardness which shows in the external parts, while the indigenous corn, richer in cornstarch, is normally soft, even after drying, as is shown in most of the kernels.

"The ears of indigenous corn have fewer kernels on the cob, but the kernels are more perfect than those on the ear sent you at this time."

47943. Kernels red.**47945. Kernels yellow.****47944. Kernels white.****47946 and 47947. CUCUMIS MELO L. Cucurbitaceæ.****Muskmelon.**

From Fresno, Calif. Presented by Mr. A. C. Jewett. Received August 7, 1919.

"Two varieties of Afghan melons which mature very late in the fall. They are very superior to the common run of melons." (*Jewett.*)

47946. No. 1.**47947. No. 2.****47948. PARKIA TIMORIANA (DC.) Merr. Mimosaceæ.****Cupang.***(P. roxburghii Don.)*

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received August 8, 1919.

"A handsome timber tree, the seeds of which are roasted and used for coffee." (*Wester.*)

47949. AMYGDALUS DAVIDIANA (Carr.) Zabel. Amygdalaceæ.*(Prunus davidiana Franch.)***Peach.**

From Dundee, Ill. Presented by the D. Hill Nursery Co., who purchased them from the Yokohama Nursery Co., Yokohama, Japan. Received August 9, 1919.

Seeds of the *davidiana* peach, part of a shipment for stock purposes from Japan by the D. Hill Nursery Co., Dundee, Ill. The seeds presumably came from China. So far as the United States Department of Agriculture is informed, this is the first commercial introduction of *davidiana* peach pits into the United States.

47950. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ.**Japanese apricot.**

From Yokohama, Japan. Purchased from the Yokohama Nursery Co., Ltd. Received at Chico, Calif., August 30, 1919.

Introduced for the use of specialists in the Department.

For previous introduction, see S. P. I. No. 46694.

47951. SOLANUM QUITOENSE Lam. Solanaceæ.**Naranjilla.**

From Guayaquil, Ecuador. Presented by Dr. H. R. Carter, assistant surgeon general, United States Marine Hospital, Baltimore, Md., who obtained them from Dr. M. E. Connor, Guayaquil. Received August 9, 1919.

"The fruit of the naranjilla is about the size of a mandarin orange; it is orange-yellow, but not flattened as much as the mandarin. The interior resembles that of a tomato or eggplant. I was told by Mr. Elizade, secretary of state of Ecuador, that it grew in the warm countries near Quito, i. e., at a lower altitude; and I feel reasonably sure that I saw a growing plant in the barren country on the upper Magdalena near Girardot, Colombia, but having no opportunity to examine it I am not positive. This plant resembled a large eggplant, 4 to 5 feet high, and was covered with fruit, some yellow and some green. I am told by the same man that it fruits when young, i. e., the first season; and from what I heard I thought it might do so from Thomasville, Ga., southward, and in southern California. The fruit, which ripens in July, is too acid to be eaten out of hand, although I liked it, but it is used as a flavor for frescos (soft drinks) and ice cream." (*Carter.*)

47952 to 47954.

From Vereeniging, Transvaal. Presented by Mr. J. Burt Davy. Received August 11, 1919.

47952. AGATHOSMA CHORTOPHILA Eckl. and Zeyh. Rutaceæ.

"Leaves of various species of *Agathosma*, of the Cape region, are used like buchu, but are of a more delicate and agreeable odor." (*National Standard Dispensatory, 1905, p. 1335.*)

47953. BAROSMA BETULINA (Bergius) Bartl. and Wendl. Rutaceæ.**Buchu.**

The honey buchu, a branching, evergreen shrub, the best variety of buchu, is found on South African mountain slopes in red sandy loam, at altitudes between 1,000 and 2,000 feet. It is bushy and compact and reaches a height of 3 to 4 feet, though it may grow taller. On account of the starlike purple flowers this plant compares favorably, as an ornamental, with the gardenia and camellia. The small light-green leaves are smooth and leathery and are covered on each surface with oil glands. A greenish yellow oil is extracted from the leaves by using alcohol or boiling water. When exposed to cold, the oil deposits a solid barosma camphor which, when purified, has the odor of peppermint. The leaves are harvested by clipping the twigs at the beginning of March. The oil content is highest in January and February, but the seeds are then still on the plants and clipping at this time would result in their loss for propagating purposes. In clipping, care is taken to have a sufficient number of buds for the next year's growth. Leaves of one year's growth are far superior to those 2 years old. They are astringent and contain a bitter substance which acts beneficially on the stomach. The Hottentots and Bushmen use a solution of the leaves for bladder and kidney complaints, and the roots for snake bites. (Adapted from *The Agricultural Journal of the Union of South Africa*, vol. 6, p. 80, and *The Agricultural Journal, Cape of Good Hope*, vol. 6, p. 147.)

47952 to 47954—Continued.**47954. BAROSMA CRENULATA (L.) Hook. Rutaceæ.****Buchu.**

The large-leaved buchu, the kind most esteemed in the colony, although not the highest priced in London, is often distinguished as the "true buchu." It is a twiggy shrub, 3 to 4 feet high, with smooth purplish branchlets and leaves 1 to 1½ inches long. The pale purplish flowers, produced in October and November, are very plentiful and last for a long time. The uses are the same as those of *B. betulina*. (Adapted from *The Agricultural Journal, Cape of Good Hope*, vol. 6, p. 147.)

47955. PARTHENIUM ARGENTATUM A. Gray. Asteraceæ. Guayule.

From Saltillo, Mexico. Presented by the Cia. Explotadora de Caucho Mexicano, through Mr. H. C. Morgan, American consul. Received August 11, 1919.

"Seeds from the guayule plant, which yields a certain kind of commercial rubber. The seeds were collected from this year's flowers." (*Morgan.*)

47956. ACHRADELPHA MAMMOSA (L.) O. F. Cook. Sapotaceæ.*(Lucuma mammosa Gaertn.)***Sapote.**

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, through Mr. José C. Zeledon. Received August 12, 1919.

"Few other fruits are of such importance to the natives of Mexico and Guatemala as the sapote, which grows wild in the forests of Guatemala, Tabasco, and Chiapas. It is often cultivated, but much of the fruit consumed in these regions is gathered from wild trees. Elsewhere in tropical America it is planted in gardens, notably in Cuba, where it is a favorite fruit. The Central American common name, *zapote* (spelled sapote in English), is taken from the Aztec *tzapotl*, a generic name applied by the ancient Mexicans to all soft sweet fruits. In Cuba it is called *mamey sapote* and *mamey colorado*.

"The sapote becomes a large tree, sometimes attaining 80 or 90 feet in height. It thrives only in regions where the climate is warm and rather moist; it can not stand the cold winters of California, and for some reason it has not succeeded in southeastern Florida, although it is apparently not the cold that interferes with its growth in the latter region. The fruits are the size of small muskmelons, but elliptic in form; they have a rough russet-brown outer covering about an eighth of an inch thick, salmon-colored or reddish flesh that is soft, melting, sweet, and of rich flavor, and a single large, elliptic, glossy-brown seed. A poor sapote resembles a squash in taste, but a good one is rich and pleasant flavored. The fruit is eaten fresh, or made into jam, or frozen to form a sherbet." (*Wilson Popenoe.*)

47957. CASIMIROA sp. Rutaceæ.

From Los Angeles, Calif. Budwood presented by Mr. Milo Baker. Received August 21, 1919.

"Budwood from a tree grown from a cutting received from Central America some years ago and budded into a white sapote tree. This budded tree is fruiting this year for the second time. The fruit is practically seedless and about the size of a smallish apple; the entire fruit is edible and very rich. The tree seems to be a vigorous grower and a prolific bearer." (*Baker.*)

"The cuttings received are more pubescent than those of the common *Casimiroa edulis* (the white sapote), and I suspect they belong to one of the other

species of this genus, probably *C. sapota* or *C. tetrameria*. It is not rare for *C. edulis* to produce seedless fruits, and, so far as I know, the other species of *Casimiroa* produce fruits much like those of *C. edulis* in character." (*Wilson Popenoe*.)

For an illustration of a seedless white sapote, see Plate II.

47958. OLEARIA FURFURACEA (A. Rich.) Hook. f. Asteraceæ.

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received July 28, 1919.

A freely branching shrub or small tree, 6 to 20 feet high, native to the North Island of New Zealand. The alternate leaves, 2 to 4 inches long and 1 to 2 inches broad, vary in shape from oblong to broadly ovate. They are coriaceous, green above, and clothed below with a dense silvery tomentum. The small heads of white flowers are borne in large, much-branched corymbs on long, slender peduncles. (Adapted from *Cheeseman, Manual of the New Zealand Flora*, p. 284.)

47959 to 47962.

From Georgetown, Demerara, British Guiana. Presented by Mr. J. B. Harrison, director, Science and Agriculture, Department Botanic Gardens. Received August 18, 1919.

47959. ANAXAGOREA BREVIPES Benth. Annonaceæ.

"*Black yarri-yarri*." A tree with yellow, medium-hard wood which is used for fishing rods. (Adapted from *Journal of the Board of Agriculture of British Guiana*, vol. 11, p. 99.)

47960. CHRYSOBALANUS ICACO L. Rosaceæ.

Icaco.

"*Kulimiro*." A small tree lining the banks of the Kaituma River, adjacent to the savanna region. (Adapted from *Journal of the Board of Agriculture of British Guiana*, vol. 11, p. 102.)

47961. CLIBADIUM SYLVESTRE (Aubl.) Baill. Asteraceæ.

"*Kunami*." A shrub which is ground up and made into pellets for poisoning fish. (Adapted from *Journal of the Board of Agriculture of British Guiana*, vol. 11, p. 102.)

47962. OCOTEA RODIEI (Schomb.) Mez. Lauraceæ.

"*Bibiru, Greenheart*." A well-known tree which grows to a large size. The wood is used for wharf piles, in shipbuilding, and other constructional work. (Adapted from *Journal of the Board of Agriculture of British Guiana*, vol. 11, p. 106.)

**47963. LIMONIUM BRASSICAEFOLIUM (Webb) Kuntze. Plumbagina-
[ceæ.**
(*Statice brassicaefolia* Webb.)

From Tangier, Morocco. Presented by M. Jules Goffart. Received August 18, 1919.

A subshrubby plant, 1½ feet high, native to the Canary Islands. The obovate leaves have sinuate margins. The branches are 2-winged, with the wings very broad; the branchlets are 3-winged. The spikelets are 2-flowered, 2 to 3 fascicled, at the ends of the branches; the calyx is purple, with glabrous tube and denticulate margin; the corolla is yellowish white. (Adapted from *Curtis's Botanical Magazine*, pl. 5162.)

47964. ORYZA SATIVA L. Poaceæ.**Rice.**

From Vercelli, Italy. Presented by Dr. Novello Novelli, director, R. Stazione Sperimentale di Riscoltura e delle Coltivazioni Irrigue. Received August 21 and 26, 1919.

"*Precoce dellarole.*"

Procured for the use of the rice specialist of the Bureau of Plant Industry.

47965 to 47967.

From Belem, Para, Brazil. Presented by Dr. J. Simão da Costa. Received August 22, 1919.

47965. OENOCARPUS BATAUA Mart. Phœnicaceæ.**Palm.**

A tall, majestic tree with a large smooth trunk, generally distinctly ringed; the leaves are terminal, pinnatisect, with linear segments; the spadices spring from beneath the leaves and are simply branched; the spathe is large, fusiform, and woody and falls off as soon as the spadix escapes from it; the flowers are monœcious, and the fruit is nearly globular, 1-seeded, with an edible covering. All species of this genus afford oil and "yukissé" (palm-drink) from the fruits, and they are also used for various other purposes. The leaves serve as a thatch, and from the nerves of the decayed petioles the Indians make arrows for their blow-pipes. The oil is colorless and sweet and excellent not only for lamps but for cooking. The shopkeepers of Para buy these oils of the Indians and mix them in equal proportions with olive oil, retailing the whole as olive oil, from which indeed it can scarcely be distinguished even by the best judges. For frying fish this oil is equal either to olive oil or butter. Native to the Amazon Valley at an altitude of not more than 1,600 feet above the level of the sea. (Adapted from Seemann, *Popular History of the Palms*, p. 270.)

47966. VIROLA SEBIFERA Aubl. Myristicaceæ.**Ucuúba.**

"A tree inhabiting the lowlands of the Lower Amazon, which produces in June and July a fruit about the size of a cherry with a brown paper-thin shell. This fruit contains an abundance of oil and stearin, and since each tree produces about 2 barrels of nuts a week during the fruiting season, there seems to be here a promising source of soap material. The timber also is valuable, being hard and dense and reddish brown in color, almost like mahogany." (*Lange, Lower Amazon*, pp. 34, 407, 467.)

47967. VOUACAPOUA AMERICANA Aubl. Fabaceæ.

(*Andira excelsa* H. B. K.)

"A tree found in the lower Amazon region, which yields timber of excellent quality. It is also called Amazon wood." (*Lange, Lower Amazon*, pp. 88, 461.)

47968 to 47972.

From Puerto Bertoni, Paraguay. Presented by Dr. Moises S. Bertoni. Received August 22, 1919. Quoted notes by Dr. Bertoni.

47968. BRITOA SELLOWIANA Berg. Myrtaceæ.

"Native name in Guarani, *Nyandu-apihsa*; in Portuguese, *Siete Capotes*. A well-known little fruit tree, very productive."

47968 to 47972—Continued.**47969.** CYPHOMANDRA sp. Solanaceæ.**Tree-tomato.**

"Said to be edible."

47970. EUGENIA sp. Myrtaceæ."Native name in Guarani, *Angangapirih-apua*. A species with round cherry-colored fruit; a low shrub, very resistant to cold; fruit good."**47971.** MANIHOT TWEEDIEANA Muell. Arg. Euphorbiaceæ."Native name in Guarani, *Guasú-mandió*. The Indians claim that by subjecting this species to annual cultivation, in a few years they obtain an edible variety."**47972.** SOLANUM CHACOENSE Bitter. Solanaceæ.**Potato.**(*S. tuberosum guaraniticum* Bertoni.)

"The tubers, thicker than those of *S. commersonii*, have a strong and somewhat potatolike flavor and are not usually eaten. But, under cultivation, there appear at times edible tubers with a potato flavor; this happens also sometimes in the wild state, but as an unstable variation, according to my results. It is a plant worth studying, especially by crossing with the common potato, for in this region it is not attacked by any disease or insect; it produces two or three times a year; and it thrives in dry and rather poor soils where the common potato is not resistant."

47973. CASUARINA CUNNINGHAMIANA Miquel. Casuarinaceæ.

From Ventimiglia, Italy. Presented by the director, La Mortola Botanic Gardens. Received August 25, 1919.

An Australian tree 30 to 40 feet high, with slender branches, staminate flowers in slender spikes, and globular fruiting cones not more than a third of an inch in diameter. The wood is dark colored, close grained, and prettily marked. (Adapted from *F. M. Bailey, Queensland Flora*, pt. 5, p. 1491.)

"This species has proved hardier in the Everglades of Florida than *C. equisetifolia* and appears to be a much handsomer form." (*David Fairchild*.)

For previous introduction, see S. P. I. No. 44532.

47974. CASSIA ANGUSTIFOLIA Vahl. Cæsalpiniaceæ.**Senna.**

From Tangier, Morocco. Presented by M. Jules Goffart. Received August 25, 1919.

This plant is one of the sources of the drug known as senna. It is grown extensively in India and Arabia. Watt in his *Commercial Products of India* says of its culture: "It is sown on red or black clay loams, fairly liberally ploughed and manured, the sowing being in May. Weeding has to be attended to, but irrigation is hardly if ever necessary. The season for collecting the leaves is June to December. The yield is said to be 1,000 pounds an acre, which allows a handsome margin for profit."

47975 to 47983.

From St. Vincent, Cape Verde Islands. Collected by Dr. H. L. Shantz. Received August 26, 1919. Quoted notes by Dr. Shantz.

47975. CAJAN INDICUM Spreng. Fabaceæ.**Pigeon-pea.**

"(No. 5. St. Vincent. July 29, 1919.) Pigeon-peas from market; said to be grown on San Antonio, the island north of St. Vincent. Mixed; the size of a small pea."

47975 to 47983—Continued.

47976. CITRUS LIMONIA Osbeck. Rutaceæ. **Lemon.**

"(No. 2. St. Vincent. July 29, 1919.) Lemon budwood. Only a few grown on this island; only a few trees seen."

47977 and 47978. DOLICHOS LABLAB L. Fabaceæ. **Bonavist bean.**

47977. "(No. 9. St. Vincent. July 29, 1919.) Beans from the market, grown on San Antonio. Brown, with large admixture of black and variegated forms."

For an illustration of this bean as it grows in Florida, see Plate III.

47978. "(No. 8. St. Vincent. July 29, 1919.) Beans from market, grown on San Antonio. Dull white."

47979 to 47982. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

47979. "(No. 6. St. Vincent. July 29, 1919.) Beans from market. Large flat; white or white and red. Grown on San Antonio."

47980. "(No. 7. St. Vincent. July 29, 1919.) Beans from market, grown on San Antonio. White; looks like a bush Lima."

47981. "(No. 10. St. Vincent. July 29, 1919.) Beans from market. Red. All beans in the market are mixed. Grown on San Antonio."

47982. "(No. 10A. St. Vincent. July 29, 1919.) Beans from market. Grown on San Antonio. Mottled."

47983. TAMARINDUS INDICA L. Cæsalpiniaceæ. **Tamarind.**

"(Nos. 4 and 13. St. Vincent. July 29, 1919.) Tamarind fruits from the largest tree on the island. Flowers and ripe fruits at the same time. Used to make a drink by putting the fruit in water (like lemonade)."

47984 to 47986. TRITICUM AESTIVUM L. Poaceæ.

(*T. vulgare* Vill.)

Common wheat.

From Sydney, New South Wales. Presented by Mr. George Valder, under secretary and director, Department of Agriculture. Received August 27, 1919. Quoted notes by Mr. Valder.

47984. "Crossbred wheat (fixed). *Dreadnaught* × *Cleveland* × *Rymer* × *Bunyip* (No. 1 early strain) from Bathurst Experiment Farm."

47985. "Crossbred wheat (fixed). *Dreadnaught* × *Cleveland* × *Rymer* × *Bunyip* (No. 2 early strain) from Bathurst Experiment Farm."

47986. "*Sutton's Sensation* from Bathurst Experiment Farm."

47987 and 47988.

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received August 27, 1919. Quoted notes by Mr. Bircher.

47987. EUGENIA PUNGENS Berg. Myrtaceæ. **Guabiyu.**

"A bush from South America, with pungent leaves and myrtlelike flowers. The black fruits, generally in pairs, are about an inch across and contain a sweet yellow flesh which incloses one or two large green seeds. Although the fruit, at present, is insipid in flavor, it might be improved by culture."

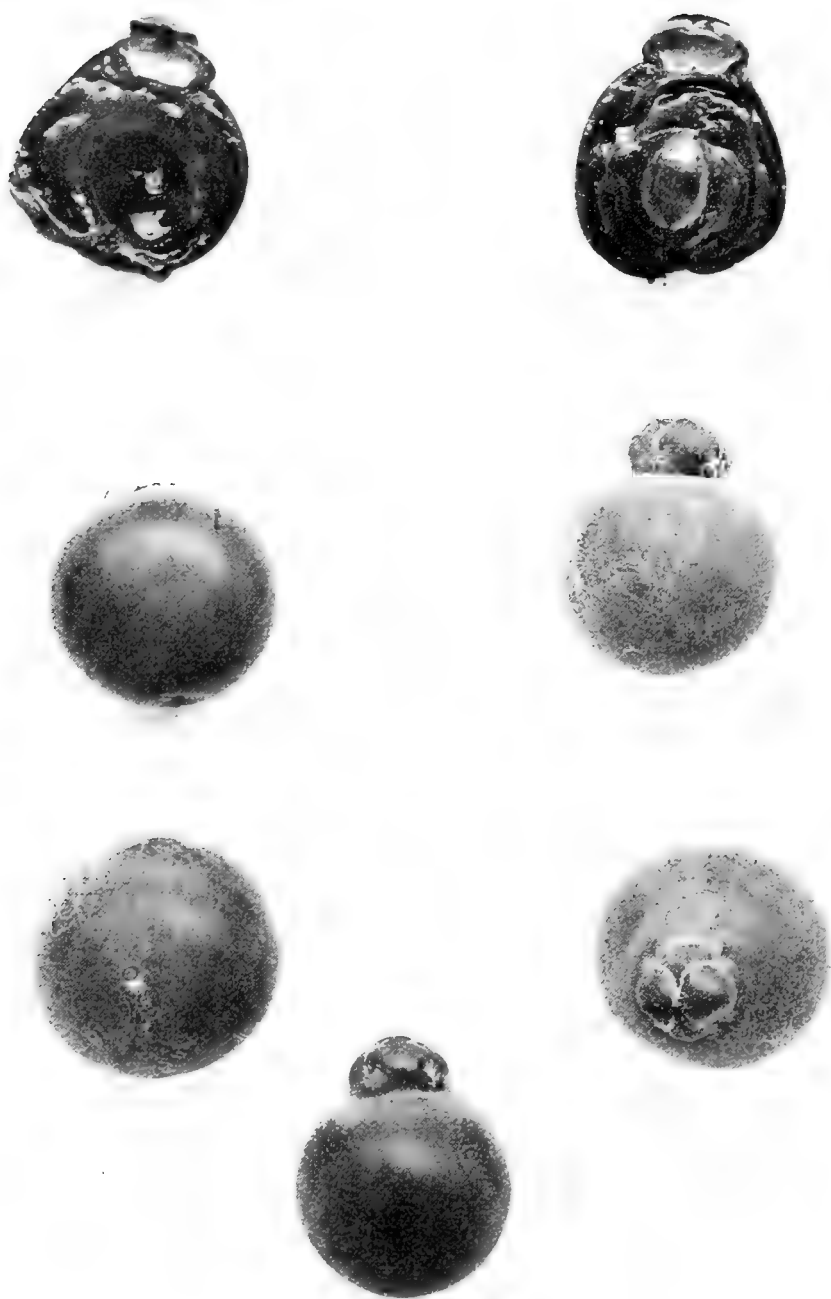
For previous introduction, see S. P. I. No. 45108.

The fruits of this species are illustrated in Plate IV.



GATHERING BONAIVIST BEANS IN SOUTHERN FLORIDA. (DOLICHOS LABLAB L.,
S. P. I. No. 47977.)

The bonavist bean is a perennial rank-growing species which forms a satisfactory ground cover in orchards. It produces its pods clustered on short erect stalks which project above the foliage, making them easy to gather. Its beans, both when young and green and when dried, are an excellent vegetable which deserves to be known in all frostless regions where the plant will grow. (Photographed by David Fairchild, Miami, Fla., February 11, 1910; P25266.)



THE GUABIYU, AN EXCELLENT FRUIT RELATED TO THE GUAVA. (EUGENIA PUNGENS BERG., S. P. I. No. 47987.)

The guabiyu is a Paraguayan shrub, is sufficiently hardy to grow out of doors in California and Florida, and is of attractive appearance. Its purplish black fruits, generally produced in pairs, are very juicy and of pleasant subacid flavor. Very few of the little-known myrtaceous fruits are of such good quality as this. (Photographed by E. L. Crandall, from fruits sent in by P. D. Barnhart, Sawtelle, Calif., October 16, 1917; P20878FS.)

47987 and 47988—Continued.**47988.** *EUGENIA SUPRA-AXILLARIS* Spring. Myrtaceæ.

"A glossy-leaved evergreen shrub from eastern Brazil, which bears clusters of white flowers and black, globose, 1-seeded fruits in clusters of 3 to 10. The fruits are about the size of small cherries and somewhat resemble juniper berries in flavor."

For previous introduction, see S. P. I. No. 45109.

47989 to 47994.

From Gwelo, Southern Rhodesia. Presented by Mr. J. Burtt Davy. Received August 30, 1919. Quoted notes by Mr. Davy.

47989. *BAIKIAEA* sp. Cæsalpiniaceæ.

"*M'Saasa*, a tall evergreen tree, with a straight trunk, characteristically dominant over considerable areas of the midlands of Mashonaland, Rhodesia, forming fairly thick forests. The bast fiber is very strong and is regularly used by natives for making game nets and for other purposes requiring great strength. These seeds were collected from a tree in Umvuma, where the summer rainfall is 25 inches."

47990. *CASSIA LAEVIGATA* Willd. Cæsalpiniaceæ.

"A rapidly growing ornamental shrub from Umvuma, Mashonaland, useful for a quick cover to prevent erosion and at the same time to add nitrogen to the soil."

47991. *COMBRETUM* sp. Combretaceæ.

"A small tree, yielding a rubber in quantity. This tree was growing on a magnesian dike on the Rhodesdale Ranch, Umvuma, Mashonaland, where the summer rainfall is 25 inches and the winters dry. The tree is plentiful, but only one was seen bearing fruit."

47992. *GOSSYPIUM* sp. Malvaceæ.

Cotton.

"A wild cotton from Melsetter, Mashonaland, July, 1919."

47993. *HEERIA* sp. Anacardiaceæ.

"A small evergreen tree growing on a magnesian dike, on the Rhodesdale Ranch, Umvuma, Mashonaland, July 11, 1919."

Received as *Anaphrenium* sp. This genus is now referred to *Heeria*.

47994. *SECURIDACA LONGIPEDUNCULATA* Fres. Polygalaceæ.

"*Violet tree*. A small evergreen, with a strong bast fiber and ornamental, violet-colored flowers. It is growing on the Rhodesdale Ranch, Umvuma, where the summer rainfall is 25 inches."

47995. *SACCHARUM OFFICINARUM* L. Poaceæ.

Sugar cane.

From St. Croix, Virgin Islands. Cuttings presented by Dr. Longfield Smith, Agricultural Experiment Station. Received September 2, 1919.

"*S. C.-12/4*. We are getting splendid results here with this cane. We now have over 100 acres planted on this island. Plantations which have trial areas report from 25 per cent up to 90 per cent more sugar per acre than from standard cane." (*Smith.*)

47996. BROSIMUM ALICASTRUM Swartz. Moraceæ. Breadnut tree.

From Ojitas, Yucatan, Mexico. Presented by Mr. E. H. Thompson, through Mr. George Totten, jr., Washington, D. C. Received September 4, 1919.

"Two quarts of *ramon* [breadnut] seed, from a fine tree. The leaves of the *ramon* tree form the principal source of fodder for the cattle of Yucatan." (Totten.)

47997 and 47998.

From Bogota, Colombia. Presented by Mr. M. T. Dawe. Received September 8, 1919.

47997. ASTROCARYUM sp. Phœnicaceæ. Palm.

"In my recent journeys I came across a palm known as *guere*. It is found in the forests of the Darien country and grows from sea level to altitudes of about 400 meters. The palm is about 10 meters in height and bears large hanging racemes of scarlet-colored fruits, the nuts of which yield a useful oil." (Dawe.)

47998. PRIORIA COPAIFERA Griseb. Cæsalpiniaceæ.

"Seeds of the *cativo* tree. This tree is abundant in the Gulf of Uraba and yields a resin known locally as 'cativa,' which is used for calking boats. I understand that the tree is also found in the Canal Zone, so it, or its product, is probably well known. I may mention that the tree is very abundant in the lowlands of this country and that the resin could be obtained in very large quantities should it possess any commercial value." (Dawe.)

47999. ERYNGIUM FOETIDUM L. Apiaceæ.

From Santiago de las Vegas, Cuba. Presented by Dr. Mario Calvino. Received September 8, 1919.

A wild herbaceous plant, widely distributed throughout the West Indies and South America, which, because of its very agreeable odor, is used as a condiment in Cuba and Porto Rico. In the former country it is especially popular as a green dressing with "Pescado a la isleña," literally, "fish a la Canaries." An infusion of the plant is considered efficacious as a febrifuge. (Adapted from *Revista de Agricultura, Comercio y Trabajo, Cuba*, vol. 2, p. 343.)

48000. MYRICA RUBRA Sieb. and Zucc. Myricaceæ.

From Del Monte, Calif. Presented by Mr. T. Lee, Hotel del Monte, from trees grown at Del Monte. Received September 10, 1919.

"*Yang mei*. The beautiful dark-purple fruits are the size of crab apples and can be eaten out of hand, made into compotes, pies, sirup, and wine. There is great variation in the habit and productivity of the trees, and also in the color, size, and taste of the fruits. The trees are evergreen and thrive best in well-drained rocky terraces. The localities that will best suit them in the United States will probably be the southern sections of the Gulf Coast States and the milder parts of California." (Frank N. Meyer.)

48001 to 48011.

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Plant Breeding Station. Received September 12, 1919. Quoted notes by Dr. Cramer.

48001 to 48010. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. Oil palm.

"I am mailing 13 boxes of seeds of *Elaeis guineensis*, which were collected from trees grown in our garden at Sumatra."

This palm is very important economically. The fruit is used by the natives for food, the leafstalks and leaves for thatching houses, and the fleshy outer layer and kernels of the fruit each yield a commercial oil—that from the fleshy part being the ordinary palm oil used in the manufacture of soap and candles and that from the kernels being the white or nut oil used for making margarine or artificial butter. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 538.)

48001. "Banga K from tree 46 I, which was grown from seed imported from Kamerun."

48002. "Banga K from tree 47 I, which was grown from seed imported from Kamerun."

48003. "Banga K from tree 54 I, which was grown from seed imported from Kamerun."

48004. "Banga K from tree 55 I, which was grown from seed imported from Kamerun."

48005. "Denden 7 from tree 46 II, which was grown from seed imported from Sao Thome Island, Portuguese West Africa."

48006. "Denden 7 from tree 54 II, which was grown from seed imported from Sao Thome Island, Portuguese West Africa."

48007. "Nsombo C from tree 43 II, which was grown from seed imported from the Belgian Kongo."

48008. "Nsombo D from tree 23 II, which was grown from seed imported from the Belgian Kongo."

48009. "Nsombo D from tree 24 II, which was grown from seed imported from the Belgian Kongo."

48010. "Nsombo D from tree 59 II, which was grown from seed imported from the Belgian Kongo."

48011. MIMUSOPS KAUKI L. Sapotaceæ.

"Seeds of *Mimusops kauki* with big fruits. The taste resembles very much that of *Achras zapota*, but the fruit is not eaten very often by Europeans; it is a tree that likes to grow near the sea."

48012. COIX LACRYMA-JOBI L. Poaceæ. Job's-tears.

From Rio de Janeiro, Brazil. Presented by Mr. T. R. Day, through Mr. Augustus I. Hasskarl, American vice consul, Rio de Janeiro. Received September 10, 1919.

"*Lagrimas de Nossa Senhora* (tears of Our Lady). This plant is a vigorous grower and produces, under almost any local conditions, great crops of excellent forage. It reaches a height of 10 feet or over, and a single plant often produces 40 to 50 shoots. The yield in green forage under favorable conditions runs very high, from 10 to even 20 tons to the acre, and the yield of grain is also very heavy. The seeds are very hard and if allowed to mature require crushing or grinding before feeding. Possibly the most important use of this plant

is for soiling—cutting four or five times during the year. The plant stools well, continually sending up new shoots or stems, and lasting, in Brazil, for some years. In temperate climates it would be an annual, as are teosinte and maize. Its favorite habitat is a low moist or even marshy soil, but it will grow successfully in dry soil, or luxuriantly in very wet localities, or even in water." (*Day.*)

For previous introduction, see S. P. I. No. 47617.

48013. PRUNUS SUBCORDATA Benth. Amygdalaceæ.

From Klamath Falls, Oreg. Presented by Mr. Elmer Applegate. Received September 15, 1919.

Obtained for experimental purposes for Department experts.

48014. JUGLANS CATHAYENSIS Dode. Juglandaceæ.

From Rochester, N. Y. Presented by Mr. John Dunbar, assistant superintendent of parks. Received September 15, 1919.

"*Juglans cathayensis* is said to grow 70 feet tall, but it does not show any tendency to be arborescent here. Our plants, which were received from the Arnold Arboretum in 1911, are about 10 years old, 8 feet tall, and bushy in habit. They began bearing 2 years since. The nuts germinate readily." (*Dunbar.*)

48015 to 48017.

From Paris, France. Presented by Vilmorin-Andrieux & Co. Received September 18, 1919.

48015. BERBERIS PRUINOSA Franch. Berberidaceæ.

Barberry.

A robust evergreen shrub, probably 10 feet or more in height, native to southwestern China. Its leaves are of leathery texture, up to 2½ inches long, lustrous green above, often grayish beneath, not unlike in general appearance those of the Himalayan *Berberis aristata*. It gets its name from the rich pruinose (or plum-colored) bloom that covers the fruits. (Adapted from *Gardeners' Chronicle*, vol. 54, p. 336.)

48016. CARAGANA AMBIGUA Stocks. Fabaceæ.

Shinaluk. A subshrubby leguminous plant, with large conspicuous flowers that are said to be eaten by the natives of Baluchistan, whence this plant comes. It is said to be found at altitudes of 5,000 to 9,000 feet. (Adapted from *Hooker, Journal of Botany*, vol. 4, p. 145.)

48017. CARAGANA MICROPHYLLA Lam. Fabaceæ.

Altagana.

Variety *crasse-aculeata*. Distinguished from the typical form of *C. microphylla* by its strong spines, which in reality are thickened stipules from the base of the rachis, and by its beautiful foliage, which is more abundant, glabrous, and persistent than in the typical form. A vigorous variety of this highly polymorphic species. (Adapted from *Fruticetum Vilmorinianum*, p. 57.)

48018 and 48019. TRIFOLIUM REPENS L. Fabaceæ.

White clover.

From Reading, England. Purchased from Sutton & Sons. Received September 19, 1919.

Introduced for experimental work by specialists of the Department of Agriculture.

48018. "White, or Dutch."

48019. "Wild White (Kentish)."

48020. RHEUM sp. Polygonaceæ.**Rhubarb.**

From Durban, Natal, Africa. Roots purchased from R. Mason & Son through Mr. William W. Masterson, American consul. Received September 20, 1919.

"A kind of garden rhubarb that is grown here, which will be a valuable introduction if similar results can be obtained with it in America. This rhubarb in the early spring (October here) is tender and crisp and is used extensively for the table. Unlike our rhubarb, which soon becomes fibrous and tough, this rhubarb lasts about seven months and is as good during that time as when it first came on the market in the spring. I do not know whether this difference is caused by the climate, soil, or other local reasons, or whether it is another kind of rhubarb. I only know it is delicious, is invariably good and tender, and lasts over half the year." (*Masterson.*)

48021. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.

From Chile. Presented by Mr. Hudson Maxim, Landing, N. J. Received September 23, 1919.

"Chile beans which I obtained from a member of the Du Pont Company who traveled in Argentina and Chile. These beans grow in a wet district at a high altitude in the Andes and are very frost resistant. From early August until the ground freezes in the fall one may have the very best of string beans from this variety, and the large juicy pods, which are borne most prolifically, may be eaten even after they have been pretty well filled with seeds. By the latter part of August the beans are large enough to be used as Limas, and they are superior to any that I know. The plants want very rich soil and an abundance of water and climbing space; they reach a height of 20 feet or more. The dry beans are hard, plump, and glossy." (*Maxim.*)

48022. BETA VULGARIS L. Chenopodiaceæ.**Sugar beet.**

From Naarden, Holland. Presented by Kuhn & Co., through Mr. Joseph W. Pincus. Received September 30, 1919.

Introduced for variety tests being carried on by Department specialists. The following table shows results of experimental tests with this variety:

Location of test.	Sugar in the beet.	Yield per acre.	
		Beets.	Sugar.
	<i>Per cent.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Bohemia.....	19.37	35,543	6,885
Zeeland, Holland.....	16.93	39,677	6,717

48023. RUMEX ABYSSINICUS Jacq. Polygonaceæ.

From Loanda, Angola, Portuguese West Africa. Presented by Mr. John Gossweiler, Servicos de Agricultura. Numbered September 16, 1919.

"This Rumex has proved a most interesting plant, reaching a height of 7 to 8 feet in one season and yielding, from the first of June all through the summer, an abundance of succulent green leaves that make an excellent substitute for spinach. It promises to be an excellent plant for our Southern States, where summer green-leaved vegetables are very scarce." (*Peter Bisset.*)

48024 to 48034.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received September 18, 1919.

48024. ACER CAMPBELLII Hook. f. and Thoms. Aceraceæ. **Maple.**

A large deciduous tree, with smooth gray bark; the chief maple of the northeast Himalayas at altitudes above 7,000 feet. The growth is moderate, and the grayish white wood is fairly hard, shining, and close grained. It is used extensively for planking and for tea boxes. This tree plays an important part in the regeneration of the hill forests, because it reproduces freely either by seed or coppice. (Adapted from *Gamble, Manual of Indian Timbers*, p. 100.)

48025. BOMBAX MALABARICUM DC. Bombacaceæ. **Silk-cotton tree.**

Ngiu or *red silk-cotton tree*. A silk-cotton tree, common in the northern provinces of Siam. The tree may attain a height of 160 feet or more and a girth of 8 feet. The trunk and branches are thorny and the flowers are red. It grows in far larger numbers in the jungle than near the villages, for the most part spontaneously. As soon as the fruit reaches maturity it is gathered. A tree about 65 feet high yields on the average 3,000 to 6,000 pods. If by chance these are left too long upon the tree, the shell bursts and the seeds, together with the silk cotton that surrounds them, drop out. The cotton obtained from this tree is yellowish white and almost as fine and glossy as silk. (Adapted from *Commerce Reports*, July 20, 1914, p. 378.)

48026. CASUARINA DEPLANCHEANA Miquel. Casuarinaceæ.

A tree or shrub, native to New Caledonia, with whorled, erect, somewhat stout branches. Its wood is very heavy and durable, excellent for turners' and wheelwrights' work. The natives use it to make their war clubs and tomahawks. (Adapted from *DeCandolle, Prodrromus*, vol. 16, pt. 2, p. 342, and *Annales du Musée Colonial de Marseille*, 2d ser., vol. 9, p. 236.)

48027. CENTAUREA RAGUSINA L. Asteraceæ.

"A round bush, sometimes nearly 6½ feet across, which grows best in a vertical position on rocks or walls and is then strikingly effective. Native to Crete and Dalmatia." (*Proschowsky*.)

48028. CORONILLA GLAUCA Jusl. Fabaceæ.

Sea-green or *day-smelling Coronilla*. A small round bush with beautiful glaucous-green foliage and pure-yellow flowers. This very ornamental shrub, native to southern France, remains almost constantly in bloom in a greenhouse and is admirably adapted for use in bouquets. The flowers are remarkably fragrant by day and almost scentless at night. (Adapted from *Curtis's Botanical Magazine*, pl. 13.)

48029. DODONAEA VISCOSA (L.) Jacq. Sapindaceæ.

A small shrub, native to Australia, with smooth red branches and obovate, coriaceous leaves. The few-flowered racemes are shorter than the leaves. The small flowers, with large purple anthers and red filiform styles, are diœcious. (Adapted from *Edwards, Botanical Register*, pl. 1051.)

48024 to 48034—Continued.

48030. LIMONIUM FRUTICANS (Webb.) Kuntze. Plumbaginaceæ.

(Statice fruticans Webb.)

Sea-lavender.

A remarkably ornamental shrubby plant, native to the Canary Islands, bearing ample corymbs of bicolored flowers; the bright-violet calyces and snowy-white corollas, which resemble morning-glories, are made more vivid by the small red bracts and by the bright-green wings of the flower stalks. The stout red stem is ringed, and each red petiole is bordered by the attenuated base of its glossy-green, leathery leaf. The rigid much-branched scapes are about three times the height of the loose rosette of obovate, crisply revolute leaves. (Adapted from *Flora des Serres et des Jardins de l'Europe*, vol. 4, p. 525.)

48031. MACKAYA BELLA Harvey. Acanthaceæ.

A tall, slender, nearly glabrous ornamental shrub with erect branches, native to Natal. The leaves are sinuate-toothed and velvety. The many-flowered racemes, 4 to 6 inches long, bear masses of pale-lilac campanulate flowers, nearly 2 inches in length, with the corolla throat delicately penciled with reticulated purple veins. This is perhaps the most beautiful of the Acanthaceæ. (Adapted from *Curtis's Botanical Magazine*, pl. 5797.)

Received as *Asystasia bella*; this species is now usually referred to *Mackaya*.

48032. SEMELE ANDROGYNA (L.) Kunth. Convallariaceæ.

"A most strikingly beautiful climber, of tropical appearance, growing to a height of 10 to 12 meters (33 to 39 feet). I grew this very drought-resistant species for more than 20 years before it produced seeds, and it was also always sterile elsewhere; I think, therefore, that it may interest you to receive a few more seeds, the plant being rare because of its unproductiveness, since the imported seeds from the Canary Islands have never germinated." (*Proschowsky*.)

48033. ZANTHOXYLUM ALATUM PLANISPINUM (Sieb. and Zucc.) Rehd. and Wils. Rutaceæ.

Kou-hua-chiao. An ornamental shrub or small tree, abundant in rocky places and by the side of streams in China, Chosen, and Japan. It is armed with stout, spreading prickles in pairs, and the handsome leaves are pinnately compound, 3 to 8 inches long, with a conspicuously winged rachis. The small pods are red and warty, disclosing lustrous-black seeds at maturity. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 6, p. 3538, and *Sargent, Plantae Wilsonianae*, vol. 2, p. 125.)

48034. ALBIZZIA LOPHANTHA (Willd.) Benth. Mimosaceæ.

"Var. *neumannii*. A shrub or small tree, native to southwestern Australia, 6 to 20 feet in height; it is more beautiful than the type. It is of rapid growth and produces enormous nodules on the roots (each nodule weighing up to 1 or 2 pounds). This tree will grow in the poorest soil. It is naturalized in my garden." (*Proschowsky*.)

48035 to 48075.

From Tangier, Morocco. Presented by M. Jules Goffart, Société d'Horticulture de Tanger. Received August 12, 1919.

48035. ACACIA ARMATA R. Br. Mimosaceæ.**Kangaroo thorn.**

This simple-leaved, prickly acacia has a shrubby stem, 10 to 20 feet high, with graceful branches which are leafy to the tip. The long stamens give a soft fluffy appearance to the heads of opened flowers which are borne on axillary peduncles longer than the leaves. This plant is much grown for hedges, though less manageable than various other hedge plants, and not so fireproof; it is more important for covering coast sand with an unapproachable prickly vegetation. The wood is small, but beautifully grained, sound, and durable. Native to southern Australia. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 349, and *Curtis's Botanical Magazine*, pl. 1653.)

48036. ACACIA BONARIENSIS Gillies. Mimosaceæ.

An almost glabrous acacia from southern Brazil, with angular branches sparsely equipped with short, recurved spines. The long bipinnate leaves and branches are glabrous; the youngest leaflets and the peduncles are silky hairy, as are also the short, panicked flower spikes. (Adapted from *Hooker, Botanical Miscellany*, vol. 3, p. 207.)

For previous introduction, see S. P. I. No. 42321.

48037. ACACIA BRACHYBOTRYA Benth. Mimosaceæ.

A handsome shrub, several feet in height, silvery white with a close silky pubescence. It bears a small number of axillary racemes of tomentose many-flowered heads, and has very short leaves. Native to southeastern Australia. (Adapted from *Hooker, London Journal of Botany*, vol. 1, p. 347.)

48038. ACACIA CALAMIFOLIA Sweet. Mimosaceæ.

An entirely glabrous plant with rounded slender branches. The leaf-stalks, or leaves as they are usually called, are filiform, compressed, drooping, and compact. The small yellow flowers are erect on a very short stalk. It is an attractive ornamental, especially when in full bloom. It is said to be an excellent tan-bark species, containing 20 per cent of tannin. Native to southeastern Australia. (Adapted from *Edwards, Botanical Register*, vol. 10, p. 839.)

48039. ACACIA CULTRIFORMIS A. Cunn. Mimosaceæ.

A tall bushy shrub, glabrous and often mealy glaucous when young; native to New South Wales. The triangular leathery leaves (phyllodia) densely cover the angular branchlets. The numerous racemes, of many globular heads, are much longer than the leaves. (Adapted from *Bentham, Flora Australiensis*, vol. 2, p. 375.)

This plant, if kept well pruned, forms an excellent hedge. For many years it has been cultivated in the open in California and is considered a desirable shrub.

48040. ACACIA CYANOPHYLLA Lindl. Mimosaceæ. Blue-leaved wattle.

A handsome shrub from Western Australia, 18 feet in height, with drooping branches and glabrous, lanceolate phyllodia; the lower ones are 1 foot, the upper 6 inches in length. The numerous large golden-yellow flowers are grouped in 3 to 5 heads borne on short racemes. The pods are long and narrow. (Adapted from *Bentham, Flora Australiensis*, vol. 2, p. 364.)

48035 to 48075—Continued.

48041. ACACIA CYCLOPS A. Cunn. Mimosaceæ.

A shrub 6 to 10 feet in height, from southwestern Australia. The flowers are in dense globular heads and the pods are flat, coriaceous, and twisted. The black spherical seeds are encircled in double folds by a thickened and richly colored funicle. This shrub is used in South Africa for fixing drift sand on seashores. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 3, and *Bentham, Flora Australiensis*, vol. 2, p. 388.)

48042. ACACIA ELONGATA Sieber. Mimosaceæ.

This slender curved-leaved acacia is a graceful species frequent on the Blue Mountains of New South Wales. It has drooping angular branches, and the younger ones are green and glabrous. The phyllodia are long and linear and bear clusters of peduncled globose heads of deep-yellow flowers in their axils. These clusters, which so profusely cover the leafy branches even to the tips, make this a remarkably ornamental plant. It is especially suitable for damp sandy land. (Adapted from *Curtis's Botanical Magazine*, p. 3337.)

48043. ACACIA EXTENSA Lind. Mimosaceæ.

A graceful shrub from Western Australia, with smooth 4-angled branches and very long, pointed leaves (phyllodia). The erect racemes, 6 to 9 inches long, are very leafy with scythe-shaped leaves between the flower heads. (Adapted from *Edwards, Botanical Register*, vol. 23, app. p. 15.)

48044. ACACIA FALCATA Willd. Mimosaceæ.

A tree 20 to 30 feet in height, with few slender branches and small yellow flowers in dainty spherical clusters on racemes borne in the axils of the dark glossy-green falcate leaves. The bark is important for tanning. The timber, which is sometimes called "lignum-vitæ," has yellow sapwood and light-brown heartwood; it is hard, heavy, and tough, and is much prized for stock-whip handles and for bending for coach-building purposes. The tree is an excellent one for raising a woody vegetation on drift sand. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 355, *Mueller, Select Extra-Tropical Plants*, p. 5, and *Loddiges, Botanical Cabinet*, vol. 12, pl. 1115.)

48045. ACACIA HOMALOPHYLLA A. Cunn. Mimosaceæ.

A small tree, abundant on the barren heaths of the interior of New South Wales, where it is one of the "spearwoods" of the natives. In Victoria, it grows on the saltbush flats and yields the close-grained, prettily marked myall wood. The gum is eaten; and the hard, heavy wood is used for boomerangs. On account of its solidity and fragrance, this dark-brown wood is much sought after for turners' work. Perhaps its most extensive use is in the manufacture of tobacco pipes. It is well adapted for cabinetmaking purposes; and fancy articles, such as rulers and napkin rings, are often made from it. It will grow in the bleakest and most arid localities wherever frost is not severe. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 357; *Mueller, Select Extra-Tropical Plants*, p. 6; and *Bailey, Queensland Flora*, pt. 2, p. 495.)

48046. ACACIA JUNCIFOLIA Benth. Mimosaceæ.

A tall shrub with slender branches and long needlelike leaves (phyllodia) tipped with a sharp point. The short peduncles are solitary or in pairs

48035 to 48075—Continued.

and bear small globular fuzzy heads of flowers. The narrow pods are half the length of the leaves. Native to northern and eastern Australia. (Adapted from *Mueller, Australian Species of Acacia*, vol. 1, pt. 2, pl. 8.)

Received as *Acacia pinifolia*.

48047. *ACACIA JUNIPERINA* Willd. Mimosaceæ.

Prickly wattle.

An Australian shrub, 8 to 12 feet in height, with numerous gracefully drooping branches covered with short hairs; the flower clusters are delicately beautiful. The wood is light, white, and tough, and much esteemed by lumbermen for maul handles. (Adapted from *Loddiges, Botanical Cabinet*, vol. 4, pl. 398, and *Maiden, Useful Native Plants of Australia*, p. 358.)

48048. *ACACIA LINIFOLIA* (Vent.) Willd. Mimosaceæ.

A small tree or shrub, 12 to 18 feet in height, native to New South Wales and Queensland; very ornamental, with delicate branches and foliage. The leaves are the same length as the spikes of globular heads of sweet-scented yellow flowers. The tough, close-grained, soft, elastic wood is suitable for ax handles and perhaps for cabinet purposes; the heartwood is reddish in color. (Adapted from *Maiden, Useful Native plants of Australia*, p. 358, and *Curtis's Botanical Magazine*, pl. 2168.)

48049. *ACACIA LONGIFOLIA* (Andrews) Willd. Mimosaceæ.

An evergreen acacia from New South Wales, with a branching ashy-brown trunk, 20 to 30 feet high. The axillary flower spikes are shorter than the leaves and are so entirely covered with sessile citron-yellow flowers that they resemble catkins. The faint odor of the flowers is similar to that of peach blossoms. This is a valuable ornamental and a good shade tree for narrow streets. The bark is used as a tan for light leathers. The rapid-growing tree renders important service in subduing loose coast sand, the lower branches striking root into the soil; it should be disseminated on extensively bare sand shores in regions where no severe frosts occur. The timber is light, tough, hard, and durable and is used for tool handles, etc. (Adapted from *Maund's Botanist*, vol. 2, pl. 77, and *Mueller, Select Extra-Tropical Plants*, p. 7.)

48050. *ACACIA MACRADENIA* Benth. Mimosaceæ.

A glabrous tree, native to Queensland, 30 to 50 feet in height with lanceolate leathery leaves (phyllodia) from 6 to 12 inches in length. The clusters of small globular heads of flowers on their short stems are arranged like bunches of grapes. The beautiful, close-grained, blackish wood is capable of taking a very high polish. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 359, and *Mueller, Australian Species of Acacia*, vol. 1, pt. 5, pl. 7.)

48051. *ACACIA MELANOXYLON* R. Br. Mimosaceæ.

An Australian hard-wooded tree, attaining a height of 100 feet; though of slow growth, it sometimes flowers when under 20 feet in height. The lanceolate phyllodia, 3 to 4 inches long, are leathery and evergreen. The elongated flat pod is often curved into a circle; and the orbicular seeds, each encircled by double folds of a long dilated scarlet funicle, hang on the tree for months, making this pyramidal acacia a beautiful street tree. The mature wood, which is very dark, makes an excellent substitute for black walnut for furniture and grillwork; and it is considered by some to

48035 to 48075—Continued.

be the most valuable of all Australian timbers. It is celebrated for its hardness and durability and is much valued for boat building, bridges, railroad carriages, tool handles, etc. The figured wood is cut into veneers. It is an excellent wood for bending under steam and is largely used for oil casks. As a fuel it is equal to hickory. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 359, and *Bentham, Flora Australiensis*, vol. 2, p. 388.)

48052 and 48053. ACACIA MICROBOTRYA Benth. Mimosaceæ.

48052. Badjong. A tall shrub from southwestern Australia, with a diameter of 1 to 1½ feet, which produces an edible gum. It prefers river valleys and lines brooks naturally. A single tree may yield 50 pounds of gum in a season. The aborigines store the gum in hollow trees for winter use; it has a pleasant sweetish taste. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 8, and *Maiden, Useful Native Plants of Australia*, p. 213.)

48053. Received as *Acacia myriobotrya*, which is considered synonymous with *A. microbotrya*. It is deemed best to grow these separately for the purpose of ascertaining the status of this form.

48054. ACACIA MONILIFORMIS Griseb. Mimosaceæ.

Tusca. A shrub with fragrant yellow flowers, common in the subtropical forests of Tucuman, Argentina, armed with straight spines and bearing dusty, 4-angled branches and petioles and glabrous leaves. The pods are linear, flat, and woody leathery; when young they are used as forage for cattle. (Adapted from *Abhandlungen der Koeniglichen Gesellschaft der Wissenschaften zu Goettingen*, vol. 19, p. 136.)

For previous introduction, see S. P. I. No. 42322.

48055 and 48056. ACACIA NERIIFOLIA A. Cunn. Mimosaceæ.

48055. A handsome tree, native to eastern Australia, 40 to 50 feet in height, with slender branchlets, mealy tomentose when young but soon glabrous. The small globular flower heads are in simple slender racemes shorter than the linear phyllodia. The flat straight pods are several inches long. The heartwood is light yellow, the rest is of a darker color. It is prettily marked, close grained, and tough. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 363, and *Bentham, Flora Australiensis*, vol. 2, p. 863.)

48056. Received as *Acacia iteaphylla*, which is considered a synonym of *A. neriifolia*. It is deemed best to grow both for the purpose of determining the status of this form.

48057. ACACIA PODALYRIÆFOLIA A. Cunn. Mimosaceæ. Silver wattle.

A shrub 4 to 6 feet in height, covered with hoary powder. Its neat gray ovate leaves and numerous long yellow racemes tipping the branches make it a very decorative species. The wood is pinkish in color and nicely marked. Native to Queensland. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 364.)

48058 and 48059. ACACIA PYCNANTHA Benth. Mimosaceæ.

Golden wattle.

48058. A small rapid-growing tree with coriaceous leaves (phyllodia) and masses of fragrant bright-yellow flowers. The tree is second only to *Acacia mollissima* in yielding tanbark. The bark

48035 to 48075—Continued.

is often superior in quality to that of the black wattle, but less in quantity, as the tree is smaller, reaching its maximum height at 30 feet. It exudes an abundance of gum, useful in cotton printing. Perfume is made from the flowers, and an aqueous infusion of the bark is used to preserve ropes, nets, and fishing lines. The wood is pale and easily worked and used for staves, tool handles, etc. The plant is useful as a sand binder. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 364, and *Mueller, Select Extra-Tropical Plants*, p. 12.)

48059. "A pendulous variety of the foregoing." Goffart.

48060 and 48061. *ACACIA RICEANA* Henslow. Mimosaceæ.

48060. A Tasmanian shrub, in general appearance much like *Acacia verticillata*, 3 to 4 feet high, with elongated and gracefully drooping branches. The surface of the dark-green awl-shaped leaves is covered with minute dots. The pale citron-colored flowers, on yellow peduncles and bearing many long exserted stamens, are in fluffy globular heads. The spikes are well down the stem from the leafy tip, and glimpses of the brown stalk between the daintily poised clusters remind one of Japanese art. (Adapted from *Maund's Botanist*, vol. 3, pl. 135.)

48061. "A slightly spiny variety of the foregoing." (Goffart.)

48062. *ACACIA ROSTELLIFERA* Benth. Mimosaceæ.

A tall shrub or small tree from Western Australia, with graceful glabrous branches. The thick, linear-lanceolate phyllodia are 2 to 5 inches long. The few flower heads are in short racemes. (Adapted from *Hooker, London Journal of Botany*, vol. 1, p. 356.)

48063. *ACACIA SCORPIOIDES* (L.) W. F. Wight. Mimosaceæ.
(*A. arabica* Willd.)

A pubescent shrub with yellow flowers, which produces the white transparent gum arabic called gum thus. This tree yields an abundance of transparent gum, "nupe," and a good soluble adhesive gum, "mozambique." The wood is strong and durable and makes excellent knees and crooked timber in shipbuilding. In India it is used for wheels, agricultural implements, tool handles, railway sleepers, and fuel. A decoction of the bark is used as a substitute for soap. The pods are used for tanning in North Nigeria and for dyeing clothes a dingy yellow in Nubia and Egypt. Pods from North Nigeria have been found to yield when used for tanning a pale fawn-colored, but rather soft leather, worth about £6 per ton in England. The pods have been found to coagulate rubber latex and are also used for making ink. The leaves and green pods are given as fodder to goats, sheep, cows, and camels; and the tender young pods are sometimes eaten as a vegetable. In India the bark is of greater importance for tanning purposes, and the pods are used almost exclusively to remove the lime from skins and hides before tanning them. The trees come to maturity in about three years, though if grown for the bark they are considered at their best when from 4 to 6 years old. In order to attain the best results for tanning bark and fuel it is recommended, for financial reasons, that the trees be uprooted and the plantations renewed every 6 to 10 years. If grown for timber, from 20 to 40

48035 to 48075—Continued.

years would be required for full development. (Adapted from *Don, General History of the Dichlamydeous Plants*, vol. 2, p. 414, and *Holland, Useful Plants of Nigeria*, pt. 2, p. 288.)

48064. ACACIA SENEGAL (L.) Willd. Mimosaceæ.

A tree widely distributed in tropical Africa and cultivated in India. It has pinnate leaves and long, dense, clublike racemes of tiny flowers bristling with long stamens. This plant yields the true gum arabic of commerce, which is used for giving luster to crêpe and silk, for thickening colors and mordants in calico printing, in the manufacture of ink and blacking, as a mucilage, and for confectionery and medicinal purposes. The gum is more abundant in the dry season, exuding usually at the forking of the branches. In Kordofan the gum is obtained from both wild and cultivated trees, and in the gardens the trees are artificially cut (strips of the outer bark being removed) shortly after the rains cease; the first collection of gum is made about 60 days after cutting, and the garden is completely picked over every fourth day thereafter until the rains begin again and new leaves appear, at which stage the exudation ceases. The period of production is given at from 3 to 20 years, beginning when the trees are 3 or 4 years old and 8 feet in height. A plantation of about 10 acres has been estimated to yield from 1,200 to 1,500 pounds of gum in the course of a season. (Adapted from *Holland, Useful Plants of Nigeria*, pt. 2, p. 293, and *Engler and Prantl, Die Natürlichen Pflanzenfamilien*, vol. 3, pt. 3, p. 112, fig. 68.)

48065. ACACIA STRICTA (Andrews) Willd. Mimosaceæ.

A shrub 3 to 6 feet high, with linear phyllodia. The paired axillary heads of yellow flowers are borne freely in spring on short peduncles well down from the leafy tips of the branches. The seedling first produces 4 or 5 pinnate leaves, then changes its leaf form and produces only entire leaves. The wood is of a beautiful texture, sound and durable, but too small for anything but a very limited use. Native to Tasmania and southeastern Australia. (Adapted from *Loddiges, Botanical Cabinet*, vol. 1, pl. 99, and *Maiden, Useful Native Plants of Australia*, p. 637.)

48066. ACACIA SUAVEOLENS (J. E. Smith) Willd. Mimosaceæ.

A rather small species, native to Tasmania and eastern Australia, with few and slender branches; it frequently flowers when 2 years old. The linear leaves are four times the length of the small axillary spikes, which bear clusters of yellow flowers and red bracts. The flowers continue for a long time and have a delicate, pleasing form and a very agreeable odor. (Adapted from *Bailey, Queensland Flora*, pt. 2, p. 490.)

48067. ACACIA VERTICILLATA (Ait.) Willd. Mimosaceæ.

A shrub 6 to 10 feet in height, recommended as a hedge and as an ornamental. The solitary oblong spikes of yellow flowers, like fluffy catkins, are borne in the axils of the whorled linear phyllodia. Native to Victoria and Tasmania. (Adapted from *Bentham, Flora Australiensis*, vol. 2, p. 334.)

48068. ACACIA VISCO Lorentz. Mimosaceæ.

An Argentine acacia, sparsely armed with recurved spines. The smooth sessile flowers, with numerous, long stamens, form scythe-shaped legumes which approach a maximum width of 1½ inches. The leaves

48035 to 48075—Continued.

are pinnately compound. (Adapted from *Abhandlungen der Koeniglichen Gesellschaft der Wissenschaften zu Goettingen*, vol. 24, p. 122.)

The striped walnut-colored wood is hard and durable. It is highly valued for its resistance to moisture and is used for all kinds of cabinet-work.

For previous introduction, see S. P. I. No. 43453.

48069. ACACIA sp. Mimosaceæ.

Sent in as *Acacia bartheriana*, for which a place of publication has not been found. Miss Katherine Jones, in Bailey's Standard Cyclopedia of Horticulture, vol. 1, p. 189, gives *A. bartheriana* Hort. as a synonym for *A. berteriana* (?), but our sample does not agree with the seeds of this species.

48070. ACACIA sp. Mimosaceæ.

Sent in as *Acacia donkelaarii*, for which a place of publication has not been found. Miss Jones states, in Bailey's Standard Cyclopedia of Horticulture, vol. 1, p. 189, that *A. donkelaarii* is a trade name for *Mimosa* (?), but our sample does not agree with the seeds of this genus.

48071. ACACIA sp. Mimosaceæ.

Sent in as *Acacia hispida*, for which a place of publication has not been found. Miss Jones, in Bailey's Standard Cyclopedia of Horticulture, vol. 1, p. 189, states that *A. hispida* Hort. is a synonym for *Robinia hispida*, but our sample does not agree with the seeds of this species.

48072. ACACIA sp. Mimosaceæ.

Sent in as *Acacia ovalifolia*, for which a place of publication has not been found.

48073. ACACIA sp. Mimosaceæ.

Sent in as *Acacia sepiaria*, for which a place of publication has not been found.

48074. PIPTADENIA CEBIL Griseb. Mimosaceæ.

(*Acacia cebil* Griseb.)

A handsome tree, attaining a height of 60 feet, forming forests in sub-tropical Argentina. The smooth pinnate leaves bear, in their axils, clusters of long-peduncled globose heads of white funnel-shaped flowers with long exserted stamens. The unarmed pubescent branches and petioles are cylindrical. The bark is astringent and is used in working leather. (Adapted from Mueller, *Select Extra-Tropical Plants*, p. 405, and *Abhandlungen der Koeniglichen Gesellschaft der Wissenschaften zu Goettingen*, vol. 24, p. 136.)

48075. PIPTADENIA RIGIDA Benth. Mimosaceæ.

An unarmed tree or shrub from subtropical South America, which furnishes the angico gum, similar to gum arabic. The small stiff leaflets are linear and shining above. The long, slender, stiff-winged legumes contain flat ovate seeds which are rich in tannin; the wood serves for naval construction. (Adapted from Mueller, *Select Extra-Tropical Plants*, p. 405, and Hooker, *London Journal of Botany*, vol. 4, p. 338.)

Received as *Acacia angico*.

48076. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Tucuman, Argentina. Plants presented by Mr. W. E. Cross, director, Agricultural Experiment Station. Received August 26, 1919.

Kavangire.

"We have made an attempt to trace the history of the Kavangire cane. In so far as our knowledge goes, cane bearing this name has been sent out only from the experiment station at Tucuman, Argentina, recently. Dr. Fritz Zerbata, who was formerly chemist at that station, informs me that the variety was imported into Argentina from the experiment station at Cayana, Brazil, about the year 1909. We have not succeeded in finding out from where the cane was sent to Brazil." (E. W. Brandes.)

48077 to 48080.

From Melbourne, Victoria, Australia. Presented by Prof. A. E. V. Richardson, agricultural superintendent. Received July 22, 1919.

48077. HORDEUM VULGARE NIGRUM (Willd.) Beaven. Poaceæ. Barley.

Gatami. "A very early variety, introduced from Manchuria. It produced good yields in the Great Plains under extremely unfavorable conditions." (H. V. Harlan.)

For previous introduction, see S. P. I. No. 20796.

48078. HORDEUM VULGARE TRIFURCATUM (Schlecht.) Beaven. Poaceæ. Barley.

Skinless. "Feed barley." (Richardson.)

For previous introduction, see S. P. I. No. 42101.

48079 and 48080. HORDEUM VULGARE COELESTE L. Poaceæ. Barley.

48079. Purple Hull-less. "This barley has shown promise in the Rocky Mountain region." (H. V. Harlan.)

48080. White Hull-less. "This is more commonly known as *Nepal*. It has been more frequently introduced into the United States than any other variety, and has appealed to farmers because of the absence of awns. It has given superior yields only in high mountain regions and is preferred in some localities for hay." (H. V. Harlan.)

48081. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ. Ma-yuen.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received September 26, 1919.

"*Djali bras.* In these times of searching for articles of food, it is perhaps worth the trouble to consider here a plant which is not generally known. I mean the *djali bras*. (The name is given to the plant as well as to the fruits.)

"The *djali watol* is better known. The Javanese children string the fruits of this plant as beads for necklaces and bracelets. The *djali bras* has kernels inclosed in a hard skin, while the *djali watol* is a hard mass. Herein the two species differ from each other. By virtue of its hard seed coat the *djali bras* can be preserved for a long time without being attacked by insects, so that it is a valuable article to provide in times of famine.

"The plant will grow everywhere, and yet it is seldom cultivated and is not generally known even among the Javanese. The *djali bras* is prepared as a

food in various ways. Steamed it can be used in the place of rice, as far as nutrition and digestibility are concerned. Prepared as a porridge it has the taste of oatmeal and is as good to eat as the latter. If ground into meal and mixed with wheat flour, half and half, bread can be made from it. The bread is much more delicious and not so sour as the common kleffe bread used here in the Dutch Indies. Pancakes and pastries can also be made from the meal. The plant can be grown on all sorts of soil. More attention should be paid to this plant than has been hitherto.' (*P. W. Van der Broek.*)

"*Djali bras* and *djali watol* are two species, both of which belong to the genus *Coix* or *Chionachne* of the family Gramineæ. Job's-tears is a common name for either both, or especially for *djali watol*; hence, also the scientific name *Coix lacryma-jobi*.

"Some details about *djali* are found in an article by Van der Kemp in the *Tijdschrift voor Nijverheid en Landbouw*, vol. 20, p. 32. According to Van der Kemp, only two species of the edible *djali* are distinguished: *Djali padi*, *Coix koenigii*, originally from Sumatra, rare at Java; and *djali ketan*, the common *Coix agrestis*.

"For the following information I am obliged to Heyne. There appears in a report by the Internationale Crediet en Handelsvereniging Rotterdam at Cheribon, dated 1912, a statement to the effect that about 1,000 piculs (a picul is 133½ lbs.) of *djali* were exported annually to Palembang and to the east coast of Sumatra. The price varied in the shipping harbors in the same year between 6 and 7 gulden (a gulden, or guilder, is \$0.402) per picul.

"There are divergent reports as to the food value of *djali*. However, that it is a nourishing and wholesome product is certain." (Excerpted from *W. G. Boorsma, Teysmannia*, vol. 29, No. 1, p. 59.)

48082. CASSIA TORA L. Cæsalpiniaceæ.

From the Belgian Kongo. Presented by Father Hyacinthe Vanderyst, Mission Catholique, Leverville, Moyen Kwilu. Received September 29, 1919.

An erect, almost glabrous annual, widely distributed through tropical Africa and through the Tropics generally. The plant attains a height of 2 to 3 feet, although the stem occasionally becomes arborescent in Guinea. From the seeds is made a most useful yellow dye, suitable for tasar silk; this is regularly sold to dyers to combine with indigo to produce a green shade. The seeds are also roasted and ground to form a substitute for coffee. Along the Gambia River, on the west coast of Africa, the stalks and tender leaves are eaten as food. The leaves and roots are each used as a remedy for ulcers and ringworms. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 2, p. 275; *Holland, Useful Plants of Nigeria*, pt. 2, p. 260; and *Watt, Dictionary of the Economic Products of India*, vol. 2, p. 224.)

48083. EUGENIA sp. Myrtaceæ.

From Sawtelle, Calif. Presented by Mr. P. D. Barnhart. Received September 29, 1919.

"An interesting *Eugenia* from South America, especially valuable for ornamental planting in California and Florida. It is evergreen, with small dark glossy-green leaves. The young leaves and twigs are a beautiful red. The plants lend themselves to shearing and will make excellent hedge plants as well as trained specimens for tubs, etc." (*Peter Bisset.*)

48084 and 48085.

From Melbourne, Victoria, Australia. Presented by Prof. A. E. V. Richardson, agricultural superintendent. Received July 22, 1919.

48084. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ. **Barley.**

Square Head. "Six-rowed field barley, produced by Prof. Perkins, of Roseworthy College, South Australia." (*Richardson.*)

48085. AVENA SATIVA ORIENTALIS (Schreb.) Richter. Poaceæ. **Oats.**

Black Tartarian. "A late black side oat grown to a limited extent in the United States." (*C. W. Warburton.*)

48086. ROSA CORIIFOLIA Fries. Rosaceæ. Rose.

From Bell Station, Md. Presented by Dr. Walter Van Fleet. Received September 8, 1920.

"Variety *frobeli*. A promising rose for budding or grafting stock. This rose has been introduced through several sources under the name of *Rosa laxa*. It was grown at the Arnold Arboretum under the name *R. laxa* for several years. *R. coriifolia* is related to the common dog rose, *R. canina*. It is a strong grower, with upright and nearly smooth stems; the flowers are white, the fruit globose and red. The vigor and hardiness, together with its upright and nearly smooth stems and lack of suckers, make it a promising plant for stock. It seeds readily and prolifically and the seedlings come very true. Fruiting plants are to be found at the Arnold Arboretum, Jamaica Plain, Mass., and in the collections of Dr. W. Van Fleet, Bell Station, Md. The rose appears to be perfectly hardy." (*B. T. Galloway.*)

48087. CORDEAUXIA EDULIS Hemsl. Casalpiniaceæ. Yeheb nut.

From Italian Somaliland, Africa. Nuts presented by the governor of Italian Somaliland, through Capt. Vannutelli, of the Italian Legation. Received September 19, 1919.

"A leguminous shrub or small tree not very far removed from our common cassia. It is also related to the carob and to the Kentucky coffee tree. The plant is an evergreen and is reported so far only from Somaliland and from a region known as the Haud, a waterless desert south of Bohotleh on the southern frontier of the British Protectorate. The kernels have a rather good flavor and are rich in sugar and carbohydrates and have also a very satisfactory amount of proteids. It is said that the natives stew and eat them. The nutritive ratio is 1:6.5, which is very good." (*B. T. Galloway.*)

48088 to 48102.

From Johannesburg, Transvaal. Purchased from the Agricultural Supply Association, through Mr. J. Burt Davy, botanist. Received September 24, 1919. Quoted notes by Mr. Davy.

48088 and 48089. AVENA SATIVA L. Poaceæ. **Oats.**

48088. "*Boer* oat. The principal oat grown for forage, i. e., oat hay, before the Anglo-Boer War, and valued for the fineness of its straw. Almost ousted by the Algerian oat and now very rare. The *Boer* oat always contains some black kernels among the brown. The glumes have a characteristic roughness which readily distinguishes them from *Algerian*. Grown under irrigation."

48089. "*Heijira* rustproof oats. A rather recent introduction which has been grown with some success in the dry districts of the Western Transvaal and is claimed to be rust resistant."

48088 to 48102—Continued.

48090. AVENA STERILIS L. Poaceæ.

Oats.

"Cape Algerian. Since the Anglo-Boer War this oat has largely replaced the old *Boer* oat, being considered less subject to rust. The straw is coarser, however, than that of the *Boer* oat."

48091. CHAETOCHLOA ITALICA (L.) Scribn. Poaceæ.

Millet.

(Setaria italica Beauv.)

"Boer Manna millet. An old South African strain of *Setaria italica*, largely grown in the summer rainfall region, especially before the Anglo-Boer War, for horse feed, but now largely replaced by *teff* (*Eragrostis abyssinica*)."

48092. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ.

Barley.

"Cape barley (*Transvaal Early*). This type of barley has been grown for generations in South Africa under unfavorable moisture conditions. Given better soil treatment and more moisture, it can be grown into a good, plump, heavy grain. It is used to some extent by local maltsters, but is more largely grown for green winter feed for horses and milch cows."

48093. HORDEUM INTERMEDIUM CORNUTUM (Schröd.) Harlan. Poaceæ.

Barley.

"Barley Wheat. A naked barley grown to a limited extent under irrigation to provide green fodder for horses and dairy cows during the dry winter months. Several strains have been met with during the last 15 years, but this is almost the only one now met with in the Transvaal, and it is scarce."

48094. MEDICAGO SATIVA L. Fabaceæ.

Alfalfa.

"Cape lucern. A local strain of *Medicago sativa* grown for years by the ostrich farmers of the Oudtshoorn Valley and well acclimatized. This seed germinates more quickly than the imported *Provence*. Considerable quantities of Cape-grown seed have been shipped to Europe and Australia since the ostrich slump, and it is believed that this has been resold as *Provence* and as *Hunter River lucern*."

48095. PENNISETUM GLAUCUM (L.) R. Br. Poaceæ.

Pearl millet.

(P. typhoideum Rich.)

"M'Myouti. A South African strain grown for food by the Bantu tribes of tropical and subtropical Transvaal and now being grown by Europeans for fodder and silage for live stock."

48096. SECALE CEREALE L. Poaceæ.

Rye.

"Orange Free State rye. A strain of rye-corn which has become adapted to the droughty conditions of the Orange Free State, where it is often grown on the eastern borders with the sole aid of the sparse winter rains. Lack of winter moisture accounts for the rather poor development of the grain."

48097 to 48100. TRITICUM AESTIVUM L. Poaceæ.

Common wheat.

(T. vulgare Vill.)

48097. "Transvaal Wolkoren wheat. A favorite soft white wheat, grown under irrigation in the Transvaal bushveld, with an average rainfall during the summer season of about 20 inches and great heat. One of the oldest of the South African wheats. It is also grown in Namaqualand and the northwestern part of the Cape Province."

48088 to 48102—Continued.

48098. "*Transvaal Kleinkoren* wheat. A very famous old wheat, considered by expert millers the best of the South African milling wheats. It is grown under similar conditions to *Wolkoren*. There are two strains, *red* and *white*, but it is impossible to get seed of either of them pure. The Boers consider that the soil affects the color and gradually changes white wheat to red or vice versa."

48099. "*Gemshok Oudebaard* wheat. An old Cape Colony bearded white wheat, grown under irrigation in the karoo, Britstown Division, Cape Province, where the rainfall is about 10 inches and the heat intense. It is a heavy yielder and the favorite wheat in that part of the country. It is recommended for trial in Arizona and New Mexico, under irrigation."

48100. "*Red Victoria*. This wheat is grown commercially only on the eastern high veld of the Transvaal; that is to say, in the districts of Ermelo, Bethel, Standerton, Carolina, and Wakkerstroom, where the rainfall is about 33 inches per annum, mainly in the summer months.

"It is grown as a winter crop, sometimes under irrigation, but in seasons where we receive a little winter rain it is treated as a dry-land crop and is considered the only wheat which can be successfully grown in those districts as a dry-land winter crop. It is sown in the months of July, August, and September; and it is perhaps the only wheat which can be grown as late as September. *Red Victoria* appears to be somewhat rust resistant; it is harvested in the early summer and therefore subject to the early summer rains, which bring rust to most wheat crops. The grain, although small in appearance, is said to mill well. This may fit in where climatic conditions do not suit regular varieties, and I would suggest the advisability of crossing *Red Victoria* with some other of your regular varieties, on account of its rust-resisting tendency."

48101. TRITICUM DURUM Desf. Poaceæ.

Durum wheat.

"*Zwaartbaard*. An old Transvaal durum wheat, almost lost during the Anglo-Boer War. It is recommended for its relative hardness; also known as *S. A. Medeah*."

48102. VIGNA SINENSIS (Torner) Savi. Fabaceæ.

Cowpea.

"*Dhal*. Grown for food by the Bantu tribes of tropical and subtropical Transvaal and Natal. It has been taken up by white farmers in Rhodesia as a green-manure crop."

48103 to 48144.

From Melbourne, Victoria, Australia. Presented by Prof. A. E. V. Richardson, agricultural superintendent. Received July 22, 1919.

"The following barley and oat varieties may be of interest to you. Some of them will be familiar to you as American-grown varieties obtained from the United States some years ago and grown here ever since; those marked with an asterisk (*) are of Australian breeding. Barleys Nos. 36 and 49 are two recent crossbreeds." (Richardson.)

Introduced for specialists in the United States Department of Agriculture.

48103 to 48144—Continued.

48103 to 48114. *AVENA SATIVA* L. Poaceæ. Oats.

48103. *Bonanza*. "A midseason white oat grown to some extent in the northern United States." (C. W. Warburton.)

48104. *Clydesdale*. "An old Scotch variety grown to some extent in the northern United States." (C. W. Warburton.)

48105. *Danish Island*. "A midseason white oat grown to some extent in the United States." (C. W. Warburton.)

48106. *Dun*. "An English winter oat similar to the *Winter turf* of the United States." (C. W. Warburton.)

48107. *Gold Queen*. "Obtained by the Department of Agriculture, Victoria, from Mr. J. W. Broatch, Moose Jaw, Saskatchewan." (Richardson.)

48108. *Norway King*. "Obtained by the Department of Agriculture, Victoria, from Mr. J. W. Broatch, Moose Jaw, Saskatchewan." (Richardson.)

48109. **Ruakura*. "A rust-resistant oat developed from a single plant of *Argentine* oats selected by Primrose McConnell, of the Ruakura Experiment Farm, New Zealand, in 1908. This variety appears to be resistant to both stem and crown rust in the United States, but experiments here indicate that it has little commercial value. It is of probable interest to plant breeders." (C. W. Warburton.)

"It has never been claimed that the new oat is apparently rustproof. What can be claimed is that it is the most resistant to disease of all the varieties tested at Ruakura." (*Journal of Agriculture, New Zealand*, vol. 6, p. 133.)

"This oat was imported from New Zealand, having originated as a variation in a crop of *Argentine* oats at the Ruakura Experiment Farm, in the Dominion. It is claimed that it is rust resistant and a wonderful yielder. It has not been tried sufficiently long in this State to allow of any further comment, except that when sown beside *Algerian*, on the south coast this season, it promised particularly well and compared more than favorably with that variety from a green-fodder point of view." (*Agricultural Gazette, New South Wales*, vol. 25, p. 1018.)

48110. *Sunrise*. "This is a very early oat, ripening quite a week before *Algerian*. The straw is a foot taller than that variety and liable to lodge in some seasons, though of much the same stoutness as *Algerian*. It stools rather sparsely, and the grain is fairly long, grayish white, plump, with a thin husk. *Sunrise* is recommended only for the warmer districts and should not be sown so early as *Algerian*. It occupies a similar place among oats to *Firbank* among wheats. It is a natural crossbreed from *Algerian* oats. Among the oats recommended for further trial at the Experiment Farms." (*Agricultural Gazette, New South Wales*, vol. 25, pt. 3, p. 236.)

48111. *Swedish*. "Presumably the well-known midseason white oat, *Swedish Select*." (C. W. Warburton.)

"Forwarded from the Panama Exposition, San Francisco, to the Department of Agriculture, Victoria." (Richardson.)

48103 to 48144—Continued.

48112. Tartar King. "A midseason white side oat grown to a limited extent in the northeastern United States." (C. W. Warburton.)

48113. Tartar King. "A midseason white side oat grown to a limited extent in the northeastern United States." (C. W. Warburton.)

48114. Write Tartarian. "The well-known late white side oat, which is grown to a limited extent in the northern United States. Identical with *White Russian*." (C. W. Warburton.)

48115 to 48120. AVENA STABILIS L. Poaceae.**Oats.**

48115. Algerian. "A variety commonly grown in Australia and New Zealand and presumably originally from northern Africa. Quite similar to *Red Rustproof*." (C. W. Warburton.)

48116. Argentine. "Presumably from a commercial lot of oats from Argentina." (C. W. Warburton.)

48117. Calcutta. "A red oat originally from India." (C. W. Warburton.)

48118. *Glen Innes. "Evidently a selection from *Algerian*." (C. W. Warburton.)

"This variety was bred by Mr. J. T. Pridham, of Cowra Experiment Farm, New South Wales." (Richardson.)

48119. *Guyra. This matures at about the same season as *Algerian*, with straw about equal in height to that variety, not coarse, but strong. It stools very fairly, and has a compact head with dark-brown plump grain which has a medium strong awn like its parent, *White Ligowo*. The husk is not thick. *Guyra* is suited to typical oat districts. It is a cross between *Algerian* and *White Ligowo*, and is one of the oats recommended for further trial at the Experiment Farms. (Adapted from *The Agricultural Gazette, New South Wales, vol. 25, pt. 3, p. 236.*)

48120. *Lachlan. "Evidently a selection from *Algerian*." (C. W. Warburton.)

"This variety was bred by Mr. J. T. Pridham, of Cowra Experiment Farm, New South Wales." (Richardson.)

48121 to 48132. HORDEUM DISTICHON PALMELLA Harlan. Poaceae.**Barley.**

48121. Archer. "Two-rowed malting barley." (Richardson.)

"One of the most widely grown barleys in England. It takes its name from its arrow-shaped spike." (H. V. Harlan.)

48122. Chevalier. "The most widely known of English varieties. It originated as a plant selected by the Rev. Chevalier, from whom it received its name. It is a commercial crop in the Gallatin Valley, Montana, and in the Salinas Valley, Calif." (H. V. Harlan.)

48123. Duckbill. "This variety has been regularly grown in Victoria as a malting barley for many years. It was probably imported from England." (Richardson.)

48103 to 48144—Continued.

48124. *Garton's Regenerated Maltster*. "Originated by Garton's seed firm in England." (*H. V. Harlan.*)

48125. **Gisborne*. "Widely grown in New Zealand and Australia." (*H. V. Harlan.*)

48126. **Golden Grain*. "Two-rowed malting barley." (*Richardson.*)

48127. *Goldthorpe*. "Feed barley." (*Richardson.*)

"An erect, late-seasoned, large-kerneled barley, widely grown in England." (*H. V. Harlan.*)

48128. *Hannchen*. "Originated by the Svalof Plant-Breeding Association, Svalof, Sweden. This has proved to be the best of the Swedish barleys under American conditions and has given good yields in the Western and Plains States." (*H. V. Harlan.*)

48129. *Kirgizean*. "A variety forwarded to the Department of Agriculture, Victoria, from the Imperial Garden, Petrograd, in 1913." (*Richardson.*)

48130. *Primus*. "Originated by the Svalof Plant-Breeding Association, Svalof, Sweden." (*H. V. Harlan.*)

"Heads borne on strong culms which are bent above almost horizontally. The kernel is especially well formed and full, ripens early, scarcely a day or so later than *Hannchen*, and the plant is especially productive. It is quite certainly, as far as quality is concerned, the highest grade yet known among the *Imperial* barleys. It is well suited to heavy cold loams and clay soils such as are to be found in middle Sweden." (*N. H. Nilsson.*)

48131. *Princess*. "A pedigreed variety, originated on the grounds of the Svalof Plant-Breeding Association, Svalof, Sweden. It is characterized by an especially strong straw and an excellent quality of grain. It is remarkably well suited for heavy clay soils where there is danger of the grain falling." (*David Fairchild.*)

48132. **Pryor*. "Two-rowed malting barley." (*Richardson.*)

48133 to 48144. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ. **Barley.**

48133. *California Feed*. "More properly known as *Coast*; a commercial variety of the Pacific and Mountain States. Probably originated in North Africa and likely introduced into California by Spanish missionaries." (*H. V. Harlan.*)

48134. *Cape*. "Two-rowed malting barley." (*Richardson.*)

"Similar to *Coast*. It has succeeded in the western United States." (*H. V. Harlan.*)

48135. *Chilean C*. "Similar to *Coast*. It has succeeded in the western United States." (*H. V. Harlan.*)

48136. *Chilean D*. "Similar to *Coast*. It has succeeded in the western United States." (*H. V. Harlan.*)

48137. **Kinver*. "Two-rowed malting barley." (*Richardson.*)

48138. *Manchurian*. "Originally from Manchuria; it has given good yields in the northern Mississippi Valley." (*H. V. Harlan.*)

48139. *No. 36*. "Introduced from New South Wales to Victoria in 1917; a selection of seed barley imported into that State." (*Richardson.*)

48103 to 48144—Continued.

48140. No. 49. "Introduced from New South Wales to Victoria in 1917; a selection of seed barley imported into that State." (*Richardson.*)

48141. Odessa. "Introduced from Odessa, Russia, and thought to be the most promising barley for South Dakota conditions." (*H. V. Harlan.*)

48142. *Roseworthy Oregon. "Six-rowed field barley, with dark-colored grain, produced by Prof. Perkins, Roseworthy College, South Australia." (*Richardson.*)

48143. Sea of Azov. "This was introduced by a local produce merchant from seed imported from Russia." (*Richardson.*)

48144. Short head. "Six-rowed field barley, with dark grain, produced by Prof. Perkins, Roseworthy College, South Australia." (*Richardson.*)

48145. SOLANUM MAMMOSUM L. Solanaceae.

From Ecuador. Collected in 1918 by Dr. J. N. Rose, associate curator, United States National Museum. Numbered in October, 1919, for convenience in recording distribution.

"This *Solanum* has large thorny leaves, and bears a large deep-yellow fruit, about 3 inches long and 2 inches through, with five small fingerlike protuberances projecting from the side, at the base. The fruit lasts for a long time, both on the plant and after being picked, and is quite a curiosity." (*Peter Bisset.*)

For previous introduction, see S. P. I. No. 46374.

48146. RAPHIA VINIFERA Beauv. Phœnicaceae. Palm.

From Aburi, Gold Coast, West Africa. Purchased from Mr. W. D. Tudhope, Director of Agriculture, Agricultural Department of the Gold Coast Colony, Ashanti, and Northern Territories. Received October 3, 1919.

The *bamboo* or *wine palm*, so called because the natives make wine from the sap of the trunk, is native to west and central tropical Africa, the commonest tree in the swamps and lowlands which line the waterways. Dense thickets of these graceful palms, traversed only by the wine gatherer or the bamboo cutter, push their way into the lagoons and extend over the flood grounds, and even for a distance of 15 to 20 miles up the river valleys into the interior. African bass, a valuable brush fiber, and raffia are both obtained from this palm. The strong whalebonelike bast fiber, contained in the lower portions of the leafstalk, is very easily extracted by a simple process of soaking and beating, and is then made into excellent brooms and brushes. Raffia is prepared by peeling off the cuticle, with some of the underlying fibrovascular bundles, on one or both sides of the leaf. It is used locally for woven fabrics, cloth, hats, and matting. The loose strips of raffia are in demand as tie bands by gardeners. In length of fiber, but more especially in yield of cellulose, it is superior to esparto grass, *Stipa tenacissima*, which is valuable for making rope, brooms, baskets, paper, etc. The following analysis proves the worth of *Raphia vinifera* for paper making: Moisture, 9.8 per cent; ash, 2.7 per cent; cellulose, 60.8 per cent. Ultimate fibers (length), 1.5 to 2.5 mm. (Adapted from *Kew Bulletin of Miscellaneous Information*, 1891, No. 49, p. 38, and Jackson, *Journal of the African Society*, vol. 1, p. 299.)

48147 to 48149. TRITICUM spp. Poaceæ.**Wheat.**

From Santa Ursula, Teneriffe, Canary Islands. Purchased from Mr. G. V. Perez. Received October 6, 1919.

"Of the two wheats, *Jarinegro* and *Morisco*, the first is much more prolific, but the people here do not like it because it does not contain as much flour. However, it must be rich in vitamins and I consider it a very valuable wheat. The peasants at Laguna (Teneriffe) are fond of mixing and sowing the two together; they do not sow *Jarinegro* nearly as much as they did in the past because of the appearance of the flour. It may be a very superior food, notwithstanding its appearance." (*Perez*.)

48147. TRITICUM DURUM Desf.

Jarinegro.

48148 and 48149. TRITICUM [AESTIVUM L.

(*T. vulgare* Vill.)

48148. Morisco.

48149. Received as a mixture of *Jarinegro* and *Morisco* from which the durum wheat has since been removed and discarded.

48150. YUCCA ELATA Engelm. Liliaceæ.**Palmilla.**

(*Y. radiosa* Trelease.)

From Las Cruces, N. Mex. Presented by Prof. J. G. Griffith, biologist, Agricultural Experiment Station, through Mr. L. H. Dewey, Botanist in Charge of Fiber Investigations. Received October 7, 1919.

A very striking arborescent yucca, the larger trees reaching a height of 5 to 7 meters [16 to 23 feet], simple, or with a few short branches at the top. The long pallid leaves are white margined, rigidly divergent, and reach a maximum width of half an inch; they are soon finely and copiously filiferous. The white bell-shaped flowers with lanceolate petals are in large panicles on long exserted peduncles, often twice the length of the rest of the plant. The capsule is stout, oblong, and unusually symmetrical, very smooth, and of a clear straw color at maturity; the seeds are exceptionally large, some are nearly half an inch long. (Adapted from *Report of the Missouri Botanical Garden*, vol. 13, p. 56.)

48151. METROSIDEROS TOMENTOSA A. Rich. Myrtaceæ.

From Bay of Plenty, New Zealand. Presented by Mr. Charles G. Hallet. Received October 6, 1919.

"Seeds of a very ornamental tree, of a spreading nature, which grows along our northern coasts. In midsummer, it is covered with crimson flowers which secrete large quantities of light-colored, mild-flavored nectar. The tree makes a good windbreak, withstanding gales and salt spray splendidly; the crooked limbs are much used for knees and cleats in boat building. The tree is probably as sensitive to frost as the fig or the lemon. Collected at Napier." (*Hallet*.)

48152. DECAISNEA FARGESII Franch. Lardizabalaceæ.

From Rochester, N. Y. Presented by Mr. John Dunbar, assistant superintendent of parks. Received October 10, 1919.

"A very attractive ornamental shrub reminding me somewhat of the Oregon grape (*Berberis aquifolium*) in habit; from E. H. Wilson's collection." (*David Fairchild*.)

An erect shrub, 7 to 16 feet in height, very common in moist woods and thickets in western Hupeh and in Szechwan between 2,000 and 8,500 feet in altitude. The deep-blue fruit contains a white pulp in which are imbedded the numerous flattened jet-black seeds. The pulp is edible but of insipid flavor. The fruits are commonly eaten by monkeys on Mount Omei and elsewhere in that region. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 1, p. 344.)

48153 to 48160.

From Burringbar, New South Wales. Presented by Mr. B. Harrison. Received October 11, 1919. Quoted notes by Mr. Harrison.

48153. *BRASSICA PEKINENSIS* (LOUR.) Gagn. Brassicaceae. **Pai ts'ai.**

"*Toyahama cabbage*. A variety of pai ts'ai which attains, with good cultivation, a weight of 30 to 40 pounds."

48154. *CAPILLIPEDIUM PARVIFLORUM* (R. Br.) Stapf. Poaceae. **Grass.**

"A native grass, 4 feet in height, called *bluegrass*."

48155. *CASUARINA CUNNINGHAMIANA* Miquel. Casuarinaceae.

A tree attaining a maximum height of 100 feet, found along mountain river banks in eastern Australia. The wood is used for yokes, tools, shingles, etc. A yoke was unimpaired after having been in use for 14 years. The foliage is much relished as pasturage. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 197.)

48156. *CUCUMIS SATIVUS* L. Cucurbitaceae. **Cucumber.**

"*Mammoth cucumber*. This cucumber grows to a very large size, almost as large as a medium-sized vegetable marrow, and keeps well. The flesh is very firm, crisp, and sweet."

48157. *HOLCUS SORGHUM* L. Poaceae. **Sorghum.**
(*Sorghum vulgare* Pers.)

"*Saccaline*. A perennial sorghum, 12 feet in height, which yields 15 to 20 tons per acre."

48158. *PANICUM PARVIFLORUM* R. Br. Poaceae. **Grass.**

"One of our best native grasses, a very heavy yielder of nutritious fodder. It is 3 to 4 feet in height and grows well in sandy soil."

48159. *PASPALUM LARRANAGAI* Arech. Poaceae. **Grass.**

"*Giant paspalum grass*. A frost-resistant grass, 5 or 6 feet in height, which gives a heavy yield and is much relished by stock. A good grass for moist land."

48160. *THEMEDA QUADRIVALVIS* (L.) Kuntze. Poaceae. **Grass.**

"*Kangaroo grass*. A splendid grass 3 to 5 feet high, always relished by stock. Worthy of careful propagation."

48161. *CAPSICUM ANNUUM* L. Solanaceae. **Red pepper.**

From Santiago de las Vegas, Cuba. Presented by Dr. Mario Calvino, director, Agricultural Experiment Station. Numbered November, 1919.

"Seed from plants grown at the Yarrow Plant Introduction Field Station, season of 1919, from seeds received April 22, 1919. This pepper is grown in Cuba under the name of the *Creole*. The beautiful golden-yellow fruit is about 3 inches long by 2 inches thick. The flavor is quite mild." (Peter Bisset.)

48162. DIOSPYROS sp. Diospyraceæ.**Persimmon.**

From Puerto Bertoni, Paraguay. Presented by Dr. M. Bertoni. Numbered October, 1919.

"*Kaki silvestre*. A species of *Diospyros*, indigenous to the forests of eastern Paraguay and commonly found in rocky places in the open woods on the banks of the Rio Parana. It is a small tree, 20 to 26 feet high, and quite leafy; it produces a great abundance of almost spherical fruits, about an inch in diameter, which mature in autumn. *Kaki silvestre* apparently does not suffer from the effects of temperatures above -3° C. [27° F.]. It could possibly be used advantageously as a stock with *Diospyros kaki*." (Bertoni.)

48163. PISTACIA ATLANTICA Desf. Anacardiaceæ.

From Tripoli, Libya, Africa. Presented by Dr. O. Fenzi, director, Stabilimento Orticolo Libico. Received October 15, 1919.

A tree, native to northwestern Algeria, 35 to 49 feet in height, with many woody branches in a dense head. The blue drupe is somewhat fleshy and about the size of a pea. The tree is frequently found in sandy uncultivated fields not far from the city of Gafsa and seems to have been cultivated at one time by the inhabitants. A resinous gum flows from the bark of the trunk and branches at various times of the year, especially in summer, and hardens to a pale yellow color. It has a pleasant aromatic odor and taste, scarcely distinguishable from the oriental mastic gum, and called by the same name, *huelc*, by the Moors. It thickens in plates covering the branches, or in irregular balls differing in thickness and shape, often the size of a finger. Some of these become detached from the tree and are scattered on the ground. The Arabs collect this substance in autumn and winter and chew it to whiten the teeth and sweeten the breath (Adapted from *Desfontaines, Flora Atlantica*, vol. 2, p. 364.)

It is one of the species used for stocks for the true pistache.

48164 to 48170.

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received October 14, 1919. Quoted notes by Mr. Wright.

48164. ALECTRYON EXCELSUM Gaertn. Sapindaceæ.

"A handsome evergreen tree, commonly called the New Zealand oak."

A tree 30 to 60 feet high, with black bark; the young branches, the under surfaces of the compound leaves, the paniced inflorescences, and the capsules are clothed with a silky, ferruginous pubescence. The globose, shining, jet-black seeds, from which the Maoris formerly extracted an oil, are half embedded in a scarlet, fleshy, cup-shaped aril. The tree yields a tough, elastic timber valuable for ax handles, bullock yokes, etc. (Adapted from *Cheeseman, Manual of the New Zealand Flora*, p. 103.)

48165. ENTELEA ARBORESCENS R. Br. Tiliaceæ.

One of the handsomest of small trees, which used to be common along the north coast of the North Island. In some places this tree is called the *New Zealand mulberry*, on account of the shape of the large heart-shaped leaves, which are beautifully veined, soft, and wilt quickly when gathered. The pure-white flowers with crumpled petals are produced in large drooping clusters, each single blossom being about an inch in diameter. The fruit is dark brown and rough, with inch-long bristles. The wood is remarkably light and was used by the Maoris for floats

48164 to 48170—Continued.

for their fishing nets and in the construction of small rafts. It is about half the weight of cork and is sometimes termed the "cork-wood" tree. It has been suggested that it might be utilized for life belts. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 242.)

48166. GAULTHERIA OPPOSITIFOLIA Hook. f. Ericaceæ.

"This dainty little New Zealand shrub, which produces two crops of charming heathlike flowers during the year, should be in every garden. It is especially suitable for rock gardens, as it is usually found growing on steep clay banks, where very little nourishment is obtained."

48167. GAYA LYALLII (Hook. f.) Baker f. Malvaceæ.
(*Plagianthus lyallii* Hook. f.)

"The giant-flowered southern lacebark of New Zealand. This is without doubt the most beautiful of our hardy large shrubs. It produces large clusters of pure-white cherrylike blossoms, hanging most gracefully on long stems. In colder parts this plant is deciduous. It is one of the easiest to cultivate, as it transplants easily and will grow from cuttings or seed."

48168. LEPTOSPERMUM SCOPARIUM NICHOLLII (Darr.-Smith) Turrill. Myrtaceæ.

A red-flowered variety of this very abundant tree or shrub, the beautiful colonial counterpart of the English broom or gorse, sometimes 30 feet in height. Early voyagers and colonists sometimes used its pungent leaves in place of tea. Indeed, the whole plant, including leaves, flowers, fruit, and young shoots, is highly aromatic, and the oil which it contains will perhaps, in the future, be put to some useful purpose. The wood is largely used for fences and firewood. The Maoris made use of it for their paddles and spears, and a bunch of the twigs makes an excellent broom. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 272.)

48169. OLEA CUNNINGHAMII Hook. f. Oleaceæ.

"A very fine flowering shrub."

It bears whitish branches, downy young shoots, linear-oblong leathery leaves 3 to 6 inches long, and small greenish white flowers in dense erect racemes. The drupes are half an inch long. Native to North Island, New Zealand. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 334.)

48170. VERONICA SPECIOSA R. Cunn. Scrophulariaceæ.

A rare and beautiful stout shrub from North Island, New Zealand, with crimson flowers in large dense racemes. The leaves are oblong, thick, shining, 1 to 4 inches long and an inch broad, with a 2-layered epidermis. It flourishes best when in reach of the sea spray. Many varieties of this plant are cultivated in gardens. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 376.)

48171 to 48189.

From Cape Town, Cape Province. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received October 24, 1919. Quoted notes by Dr. Shantz.

48171. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. **Watermelon.**

"(No. 16. St. Vincent, Cape Verde Islands. July 28, 1919.) A few black seeds. All seeds in the market are very impure."

48171 to 48189—Continued.

48172 and 48173. *CUCURBITA PEPO* L. Cucurbitaceæ. **Squash.**

48172. "(No. 14. St. Vincent, Cape Verde Islands. July 28, 1919.) White seeds of a cucurbit sold in market. There was no fruit with this seed. Apparently a few plants are grown where water can be obtained to irrigate."

48173. "(No. 15. St. Vincent, Cape Verde Islands. July 28, 1919.) Yellowish seeds of a cucurbit. Procured with the preceding number."

48174. *FELICIA* sp. Asteraceæ.

"(No. 29. Kirstenbosch, Cape Province. August 25, 1919.) A low-growing spreading plant, 3 inches high, with bright-blue asterlike flowers, suitable for borders. It is sparse in habit of growth, but the flowers are unusually attractive."

48175. *OXALIS* sp. Oxalidaceæ.

"(No. 35. Table Mountain, Cape Town. August 23, 1919.) An unusually large white-flowered oxalis. The leaves form a mat on the soil surface, and the flowers are almost sessile. It is a very attractive plant. The plants prefer granitic or sandy soil and grow in rather dry locations."

48176. *PARKINSONIA ACULEATA* L. Mimosaceæ.

"(No. 11. St. Vincent, Cape Verde Islands. July 28, 1919.) This is used as a hedge plant almost exclusively in the cultivated and irrigated valley of this island. It is very similar to a form found in Arizona. Seed purses, sold on the streets, are, I believe, made from the seeds of this tree."

48177 and 48178. *PENNISETUM CILIARE* (L.) Link. Poaceæ. **Grass.**

48177. "(No. 19. St. Vincent, Cape Verde Islands. July 29, 1919.) From the Mattiato Ranch. Seeds of a grass grown for burros and goats, especially where there is a little irrigation."

48178. "(No. 40. Mowbray, Cape Town. August 27, 1919.) *Buffel grass*. A new drought-resistant grass, not so good when green but excellent when ripe. The seeds of this grass were obtained from Starke Bros., Rosebank, near Mowbray, who regard it as one of the best finds. It is said to be especially valuable after it has completed its growth and dried in place, forming an excellent dry feed. It would seem to be best adapted to areas of occasional drought."

48179. *PHYLLANTHUS ACIDUS* (L.) Skeels. Euphorbiaceæ. **Iba.**
(*P. distichus* Muell. Arg.)

"(No. 12. St. Vincent, Cape Verde Islands. July 28, 1919.) A tree, with compound leaves, called *gruzierra* by the natives and *amloi* by the Hindus. The white fruit, almost an inch in diameter, is very pleasant to the taste and is used for pickles."

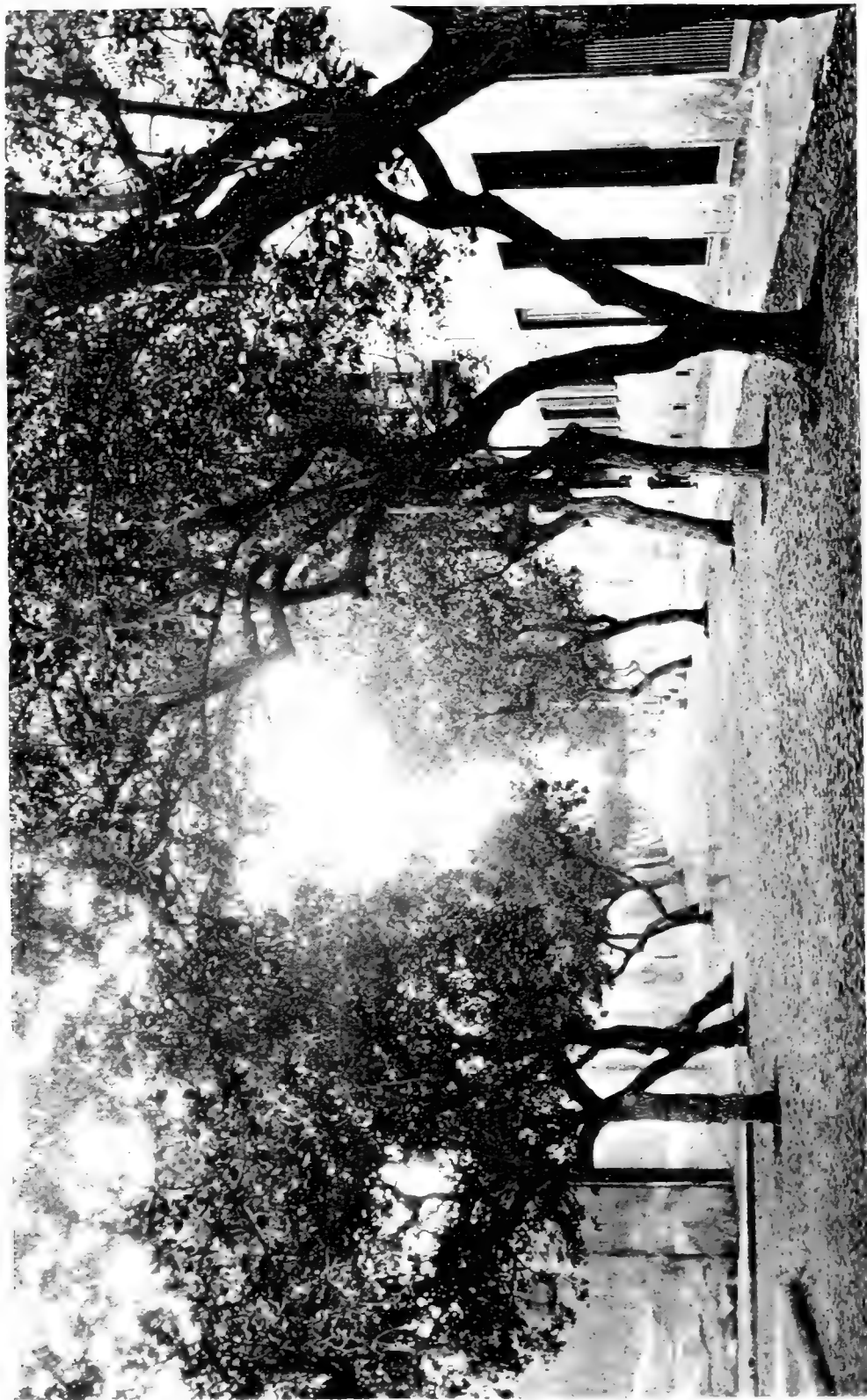
48180 and 48181. *PHYSALIS PERUVIANA* L. Solanaceæ. **Poha.**

48180. "No. 20. Groot Constantia, Cape Province. August 23, 1919.) The Cape gooseberry, said to be introduced from Peru, is a bushy annual, 1 to 2 feet high, which grows as a weed. This is one of the most important jam fruits of the Cape Region, and is served everywhere in hotels and on trains. At Port Elizabeth I



A FAVORITE PROTEA OF CAPE PROVINCE. (*PROTEA LATIFOLIA* R. BR., S. P. I.
No. 48183.)

Owing to lack of understanding of the methods of handling plants of this genus, they have been neglected by American horticulturists. As they are among the most beautiful and popular of the many handsome ornamental plants of South Africa, we should make an effort to learn the secrets of their successful culture. The species here shown, which has purple-tinted flower heads 4 inches broad, should be given a careful trial in California and Florida. It probably will not do well on soils which contain much lime. (Photographed by Dr. H. L. Shantz, Kirstenbosch, Cape Province, September 7, 1919; P36117FS.)



A GOOD STREET TREE FOR ARID TROPICAL REGIONS. (THESPESIA POPULNEA (L.) SOLAND., S. P. I. No. 48186.)

The island of St. Vincent, one of the Cape Verde group, off the western coast of Africa, has a very dry climate. Practically the only street tree grown there is *Thespesia populnea*. Its use for this same purpose on the moister islands of the Pacific Ocean gives no hint of its ability to thrive under adverse conditions. (Photographed by Dr. H. L. Shantz, St. Vincent, Cape Verde Islands, July 28, 1919; 136639F.S.)

48171 to 48189—Continued.

found a few fresh ones in a fruit store. They are rather tart, more so than our ground cherries. This plant should be given a thorough trial in several parts of the United States. On the dry plains and irrigated sections it may do well, and would prove very valuable as an annual fruit crop. It will also probably grow well in southern California and in the Southern States. In the Cape region it is allowed to grow in waste places as a weed, but it is highly prized by all."

48181. "(No. 38. Mowbray, Cape Town. August 27, 1919.) This grows as a weed everywhere in the Cape region, and makes most delicious jam. It is short lived and dies each winter, although there is no frost here."

48182. *PROTEA LANCEOLATA* E. Mey. Proteaceæ.

"(No. 131. Kirstenbosch, Cape Province. August 25, 1919.) A very attractive shrub with light-yellow flowers and pale yellowish green foliage, not as striking as some of the other *Proteas* when in flower, but of decided value as a decorative plant. The habit and requirements are the same as those of the other *Proteas*."

48183. *PROTEA LATIFOLIA* R. Br. Proteaceæ.

"(No. 24. Cape Town, Cape Province. August 24, 1919.) A wonderful *Protea*, with flowers 4 inches across. The Cape region is noted for its beautiful flowers, and of these none are more popular than the large flowers of the *Proteas*. The shrubs are 2 to 6 feet high and bear the large flower on the tip of almost every branch. Seeds only are sent, but these are said to grow easily, and it will be possible to test the seedlings on several types of soil. Acid, or at least humus, soils should be tried in Florida and California."

For an illustration of this plant in bloom, see Plate V.

48184. *PROTEA LEPIDOCARPODENDRON* L. Proteaceæ.

"(No. 27. Kirstenbosch, Cape Province. August 25, 1919.) This is one of the most striking plants of this group. The flowers are grouped into large heads 3 inches long, and when open are 4 to 6 inches across. The black-tipped purple bracts, which appear like petals fringed with long black silky hairs, produce a very pleasing effect, and I doubt if a more attractive ornamental could be grown. This plant grows well from seed and should be tried in acid soil. It should grow in the leached soils of southern California; there is little lime, however, in the soil where it grows naturally."

48185. *PROTEA SUSANNAE* Phillips. Proteaceæ.

"(No. 28. Kirstenbosch, Cape Province. August 25, 1919.) A beautiful *Protea* with a very large flower. The seeds are said to grow readily, and I hope we can succeed in bringing them to flower. If this is once done, their popularity will be assured."

48186. *THESPESIA POPULNEA* (L.) Soland. Malvaceæ.

"(No. 17. St. Vincent, Cape Verde Islands. July 28, 1919.) The street tree of St. Vincent, where it appears to grow without irrigation."

For an illustration of this tree used as a street tree, see Plate VI.

48171 to 48189—Continued.

48187. *URSINIA CAKILEFOLIA* DC. Asteraceæ.

“(No. 26. Kirstenbosch, Cape Province. August 25, 1919.) An unusually attractive plant with fine foliage and a mass of flowers of a very brilliant reddish orange. As a border for walk or driveway it will all but rival *Mesembryanthemum*. This *Ursinia* is an annual, 10 to 12 feet high; it flowers early and continuously and should do well.”

48188. *VIRGILIA CAPENSIS* (L.) Lam. Fabaceæ.

“(No. 30. Kirstenbosch, Cape Province. August 25, 1919.) A handsome quick-growing tree, attaining a height of 20 feet, with a dark rough bark, finely divided compound leaves, and profuse dense racemes of pink sweet-scented flowers. The wood is used chiefly for ox yokes, etc. This plant should be tried in the South and also in the Southwest, especially in California.”

48189. *WATSONIA* sp. Iridaceæ.

“(No. 34. Table Mountain, Cape Town. August 23, 1919.) This plant looks like a *Gladiolus*. The leaves are sword shaped and the flowers very attractive.”

48190. *PYRUS* sp. Malaceæ.

Pear.

From Lawrence, Kans. Cuttings presented by Mr. T. E. Griesa. Received November 26, 1919.

“A medium-sized pear resembling a small *Bartlett* in shape and color. Flesh tender, melting, buttery, nearly sweet, rich, and good to very good in quality. According to Mr. Griesa, the tree was given to him some six years ago by his brother. It was propagated from a seedling tree originating on the farm of Mr. O. H. Ayer, a few miles south of Mr. Griesa's place. Only a few of the trees were propagated, and the one on Mr. Griesa's place is probably the only one in existence at this time. The tree started bearing when it had been set four years. It ripened several fine fruits that year, and last year (1918) was full of bloom, but the fruit was killed by late frost. This year (1919) the tree is loaded with fruit. It was set in an orchard with *Bartlett*, *Clapp Favorite*, and *Douglas*. The *Bartlett* and *Clapp Favorite* have long since died of fire-blight, but the new variety and the *Douglas* show no signs of blight. According to Mr. Griesa, the tree is as large as apple trees set in the same orchard fourteen years ago.

“The pear was submitted to Messrs. H. P. Gould and C. P. Close, of the Office of the Horticulturist, United States Department of Agriculture. The description of the fruit given above is in part quoted from a statement from Mr. Close. Mr. Gould reports that externally the pear resembles a *Bartlett* but internally it looks more like a *Kieffer*.” (*B. T. Galloway*.)

48191. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

From Sydney, New South Wales. Presented by Mr. George Valder, under-secretary and director, Department of Agriculture. Received October 14, 1919.

“Sorghum known as ‘Saccalene.’ This is not a perennial sorghum, but it can be cut several times during the season, fresh growth being made from the roots. It yields a heavier crop than any other sorghum yet tested by this department and retains its succulence for a longer period after being frosted.

It will be found that this crop gives the best results when grown on good soil where the rainfall is fairly high or where irrigation can be practiced. Sowing should be made early in the spring." (*Valder*.)

48192 to 48213.

From La Reole, Gironde, France. Presented by Mrs. Rachel Severin. Received October 2, 1919. Quoted notes by Mrs. Severin.

"French and Spanish selected cereals which grow well in the Aquitanian region from Bordeaux and Toulouse to Nantes and Paris."

48192 and 48193. AVENA STERILIS L. Poaceæ.

Oats.

48192. "*Ligowo* × *Brie* (cross between *Ligowo* and *Brie*)."

For previous introduction of *Ligowo*, see S. P. I. No. 612.

48193. "*Noire Maroc* (Black oats of Morocco)."

48194 and 48195. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ.

Barley.

48194. "*Staf Tunisie* (Staf barley from Tunis)."

48195. "*Mecknes Maroc* (Mecknes barley from Morocco)."

48196 and 48197. SECALE CEREALE L. Poaceæ.

Rye.

48196. "*Limousin* (Limousin rye). From the central plateau region of France."

48197. "*Landes* (Landes rye). From the Province of Landes."

48198 to 48207. TRITICUM AESTIVUM L. Poaceæ.

Common wheat.

(*T. vulgare* Vill.)

48198. "*Bladette*. From hillside land near Toulouse."

48199. "*Blé Blanc de La Reole* (La Reole white); very successful in alluvial lands near Bordeaux."

48200. "*Blé Blanc de La Reole* (La Reole white); bearded sport from near Bordeaux."

48201. "*Blé de Gironde* (Gironde wheat), from near Bordeaux; very good for loam."

48202. "*Blé Rouge de Bordeaux* (red wheat from Bordeaux); successful through all the world."

48203. "*Blé Tendre* (tender wheat); from Tunis."

48204. "*Candeal de Sovia* (Sovia wheat); from Spain."

48205. "*Candeal fino* (fine wheat); from Spain."

48206. "*Rieti* × *Japhet* No. 30."

"One of the parents, *Rieti*, is one of the finest of the Italian wheats; it is very early, productive, and rust resistant; it can stand very high temperature, and does not lodge." (*Schribaux*.) This was crossed by Prof. Schribaux, of Paris, with the yellow-grained *Japhet*.

For previous introduction of the parent wheats, see S. P. I. Nos. 17994, 23628, 26084, and 44949.

48207. "*Rouge d'Alsace* × *Bordeaux*. Crossed by Prof. Schribaux."

"*Rouge d'Alsace* is a winter wheat and *Bordeaux* is a very productive wheat; it is hoped that the hybrid will combine resistance to cold with great yields." (*Schribaux*.)

48192 to 48213—Continued.

48208 to 48212. *TRITICUM DURUM* Desf. Poaceæ. **Durum wheat.**

48208. "*Carita de ratón* (rat's delight) ; from Spain."

48209. "*Enano de Jaen* (dwarf from Jaen) ; from Spain."

See S. P. I. No. 47888 for previous introduction.

48210. "*Fanfarron* (bully) ; from Spain."

48211. "*Raspinegro* (rough black) ; from Spain."

See S. P. I. No. 47890 for previous introduction.

48212. "*Rubio enlargado d'Atlemtege* (large red from Atlemtege) ; from Spain and Portugal."

48213. *TRITICUM TURGIDUM* L. Poaceæ. **Poulard wheat.**

"*Poulard d'Australie* (Australian Poulard) ; grows very well in southwestern lands."

48214. *LITCHI CHINENSIS* Sonner. Sapindaceæ. **Lychee.**
(*Nephelium litchi* Cambess.)

From Santa Barbara, Calif. Cuttings presented by Mr. E. W. Hadley.
Received October 7, 1919.

"Cuttings from an interesting lychee tree growing in a garden on East Sola Street, Santa Barbara, Calif., lately owned by Mr. E. W. Hadley. There are only two lychee trees (of which we have records) that have fruited in the open in the United States, this one and one near Tampa, Fla. These cuttings were obtained for propagation, so that plants can be tried in other sections to see if this variety is more frost resistant than those previously tested." (*Peter Bisset.*)

48215 to 48220.

From Vereeniging, Johannesburg, Transvaal. Presented by Mr. J. Burt Davy. Received October 8, 1919. Quoted notes by Mr. Davy.

48215. *ACACIA SIEBERIANA* DC. Mimosaceæ.

"(No. 136.) *Kecombwi*. A deciduous tree, on alluvial flats on the outer fringe of river vegetation."

A shrub or small tree, from Portuguese West Africa, reaching a height of 30 feet, with a very beautiful dilated crown and whitish flowers. The very hard, acute, white spines are 2 to 3 inches long, and the wood is hard and whitish. (Adapted from *Hiern, Catalogue of Welwitsch's African Plants, pt. 1, p. 313.*)

48216. *MARKHAMIA PAUCIFOLIOLATA* Wildem. Bignoniaceæ.

"(No. 177.) From Elizabethville."

A tree with compound leaves and young branches yellow pubescent, native to the Belgian Kongo. The oval stipules are sharp-pointed, and the campanulate flowers are in dense panicles. The wood is useful for construction work. (Adapted from *Wildeman, Études sur la Flore du Katanga, p. 131.*)

48217. *TACCA PINNATIFIDA* Forst. Taccaceæ. **Fiji arrowroot.**

"(No. 131.) On termite nests."

Found from India to tropical Australia and Polynesia, also in Madagascar. This perennial plant will live even on sandy shores, and it is not unlikely that it will endure a temperate climate. From the tubers

48215 to 48220—Continued.

the main supply of the Fiji arrowroot is prepared. The *Tacca* starch is much valued in medicine, and is used particularly in cases of dysentery and diarrhea. Its characteristics are readily recognized under the microscope. From the leaves and flower stalks light bonnets are plaited. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 521.)

48218. *XYLOPIA* sp. Annonaceæ.

"(No. 135.) From Cataract Island, Zambezi River."

48219. (Undetermined.)

"(No. 169.) *Kafiecfe*. From Elizabethville."

48220. (Undetermined.)

"(No. 128.) *Moolemhure*."

48221 and 48222.

From Buitenzorg, Java. Purchased from Mr. R. D. Rands, Department of Agriculture. Received October 15, 1919.

48221. *CANARIUM INDICUM* Stickm. Balsameaceæ.
(*C. commune* L.)

Kanari.

A large ornamental tree, native to Java and grown to a great extent in that country as a shade tree and for its edible nuts. The tree is notable for its remarkable buttressed trunk and ornamental yellow blossoms. The dark-purple fruits are produced in great abundance almost throughout the year. The kernel of the fruit is edible and is used in the production of oil for burning and other purposes; it has a very high food value, and the proportion of fat is 72.3 per cent as against 65 per cent in the case of walnuts, filberts, and hazelnuts. The nuts are very hard and require a hammer to break them. (Adapted from *Milsum, Fruit Culture in Malaya*, p. 55.)

For previous introduction, see S. P. I. No. 20808.

48222. *CANARIUM MOLUCCANUM* Blume. Balsameaceæ.

Bageja.

"A large tree, native of the Moluccas, quite similar in growth to the kanari, but having larger nuts about halfway in size between the kanari and pili; the kernels are of excellent flavor and quality." (*Philippine Agricultural Review*, vol. 9, p. 203.)

48223. *EUGENIA AQUEA* Burm. f. Myrtaceæ.

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, of the Middle Egypt Botanic Station. Received October 17, 1919.

A medium-sized tree, with smooth evergreen foliage and large white flowers; native to the Moluccas and Ceylon. It is planted extensively in Bengal and Burma. The fruit, which is about the size of a loquat and flattened at the end, is either pale rose colored or white and has an aromatic taste. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 3, p. 283.)

48224. *AVENA NUDA* Hoejer. Poaceæ.

Oats.

From Nanking, Kiansu, China. Presented by Mr. John H. Reisner, University of Nanking. Received October 21, 1919.

"*Hull-less* oats a small field of which I found on a recent trip to Shansi. The oats were found near Kih sien, on the central Shansi plain." (*Reisner*.)

48225 to 48228.

From Honolulu, Hawaii. Collected by Mr. J. F. Rock, of the College of Hawaii. Received October 15, 1919.

48225. *FICUS* sp. Moraceæ.

Fig.

"(No. 626.) A small undershrub, collected in Hongkong, July, 1919; grows in shade to a height of 4 to 5 feet." (Rock.)

48226. *HEMIGRAPHIS* sp. Acanthaceæ.

"(No. 634.) A semierect acanthaceous creeper, with large blue trumpet-shaped flowers. Native to Siam. Collected in July, 1919." (Rock.)

48227 and 48228. *HYDROCARPUS ANTHELMINTHICA* Pierre. Flacourtiaceæ.

A tree reaching a height of about 50 feet, with reddish yellow, heavy, close-grained wood. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises*, p. 303.)

48227. "(No. 630.) Collected in Bangkok, Siam, August, 1919. Much used in China as a treatment for leprosy." (Rock.)

48228. "(No. 631.) Collected in Bangkok, Siam, July, 1919. The seeds of this tree are much used in China as a treatment for leprosy." (Rock.)

48229. BAMBOS TULDA Roxb. Poaceæ.

Bamboo.

From Allahabad, India. Presented by Mr. P. H. Edwards, The Jamna School. Received October 22, 1919.

"Katanga bamboo." (Edwards.)

The common Bengal bamboo which is arborescent and has dark-green stems and pale soft leaves, pubescent beneath. The young shoots are pickled when only about 2 feet high; the split culms are used for mats, baskets, and window shades; the wood is strong and is largely used for roofing and scaffolding. This bamboo is the variety used for making fishing rods. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 1, p. 393.)

For previous introduction, see S. P. I. No. 44240.

48230 to 48261.

From Victoria Falls, Rhodesia. Presented by Mr. J. Burt Davy. Received October 15, 1919. Quoted notes by Mr. Davy, except as otherwise noted.

48230. *ACACIA REHMANNIANA* Schinz. Mimosaceæ.

"(No. 95.) From granitic soils, Fort Rickson, Matabeleland."

48231. *ALBIZZIA* sp. Mimosaceæ.

"(No. 84.) A small tree growing in granitic soil at Matoppo Hills, Matabeleland."

48232. *ALBIZZIA* sp. Mimosaceæ.

"(No. 96.) Found growing in basaltic formation at Victoria Falls."

48233. *AMERIMNON* sp. Fabaceæ.

(*Dalbergia* sp.)

"(No. 97.) From basaltic formation at Victoria Falls."

48234. *BAIKIAEA PLURIJUGA* Harms. Cæsalpiniaceæ. **Rhodesian teak.**

"(No. 80.) Native names, *i-gusi*, *makoosi*. The wood is much valued for construction, sleepers, etc.; it is said to be very hard to work."

A tree, 49 to 66 feet in height. native to central Africa, with pubescent branches and shining glabrous compound leaves, pubescent beneath. The

48230 to 48261—Continued.

long silky racemes and fruits are golden yellow. (Adapted from Warburg, *Kunene-Sambesi Expedition*, p. 248.)

48235. BABYXYLUM AFRICANUM (Sond.) Pierre. Cæsalpiniaceæ.
(*Peltophorum africanum* Sond.)

“(No. 59.) A valuable wood from Bulawayo; Chilengi names, *i-kani, munyri*.”

An unarmed tree, 20 to 30 feet in height, from Lower Guinea and south-central Africa. The yellow flowers are in erect racemes and the flat indehiscent legumes have a winglike margin. (Adapted from Oliver, *Flora of Tropical Africa*, vol. 2, p. 260.)

48236. BAUHINIA MACRANTHA Oliver. Cæsalpiniaceæ.

“(No. 73.) A small ornamental tree, with large white flowers, from Victoria Falls.”

A pubescent shrub, 4 to 5 feet in height, with thin leathery compound leaves and very large flowers, 2 or 3 together on short terminal peduncles; the obovate petals are $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, pinnately veined from a prominent deliquescent midrib. (Adapted from Oliver, *Flora of Tropical Africa*, vol. 2, p. 289.)

48237. BAUHINIA sp. Cæsalpiniaceæ.

“(No. 86.) *M'weew*. A ‘sausage’ tree.”

48238. BERLINIA sp. Cæsalpiniaceæ.

“(No. 78.) A small leguminous tree.”

48239. BRACHYSTEGLIA sp. Cæsalpiniaceæ.

“(No. 99.) A leguminous tree, from Victoria Falls, on Kalahari sand formation. It is said to be good timber.”

48240. BRIDELIA MICRANTHA (Hochst.) Baill. Euphorbiaceæ.

“(No. 89.) The leaves of this tree are browsed by cattle.”

A tree 20 to 40 feet in height, with a dense wide-spreading head and elliptic, slightly coriaceous leaves, shining above and also glabrous or minutely puberulous below. Native to Upper and Lower Guinea, Uganda, and German East Africa. (Adapted from Oliver, *Flora of Tropical Africa*, vol. 6, p. 620.)

48241. CASSIA ABBREVIATA Oliver. Cæsalpiniaceæ.

“(No. 76.) From Victoria Falls.”

A shrub or tree, attaining 15 to 25 feet, with compound leaves 1 foot in length and terminal racemes of red or yellow flowers. The tomentose legumes are 12 to 15 inches long. (Adapted from Oliver, *Flora of Tropical Africa*, vol. 2, p. 271.)

48242. COMBRETUM APICULATUM Sond. Combretaceæ.

“(No. 62.) A small tree, found in the scrub on granitic soil, at Bulawayo.”

A small erect unarmed tree from South Africa, with many grayish yellow branches, racemes of small yellow flowers, and small golden yellow fruits bearing four shining and glabrous wings. (Adapted from Harvey and Sonder, *Flora Capensis*, vol. 2, p. 510.)

For previous introduction, see S. P. I. No. 28342.

48230 to 48261—Continued.

48243. COMBRETUM IMBERBE Wawra. Combretaceæ.

"(No. 68.) A large tree with hard heavy wood; from Victoria Falls."

A very tall tree, from the forests of Benguela, with red-veined, white scaly leaves and dense racemes of small, long-stemmed flowers followed by dark-red 4-winged scaly fruit. (Adapted from *Sitzungsberichte der Mathematisch, Naturwissenschaftlichen Classe der Kaiserlichen Akademie der Wissenschaften*, vol. 38, p. 556.)

48244. COMBRETUM RHODESICUM Baker. f. Combretaceæ.

"(No. 61.) A small tree, growing in granitic soil in the scrub at Bulawayo."

A Rhodesian tree with round branches and small leaves, light colored below. The dense spikes of flowers are followed by fruits having 4 light-brown scarious wings. (Adapted from *Journal of Botany*, vol. 37, p. 435.)

48245. COPAIVA COLEOSPERMA (Benth.) Kuntze. Cæsalpiniaceæ.
(*Copaifera coleosperma* Benth.)

"(No. 72.) *Mosowri, masibi*. The Rhodesian mahogany."

A handsome evergreen tree which is one of the best timbers of Southern Rhodesia. The aril used to be eaten by Bushmen. The district of Kosibi is named after the tree."

"The red aril is used in preparing a nourishing drink." (*Oliver, Flora of Tropical Africa*, vol. 2, p. 314.)

48246. COPAIVA MOPANE (Kirk) Kuntze. Cæsalpiniaceæ.
(*Copaifera mopane* Kirk.)

"(No. 82.) *Mopane*. One of the best timbers of Southern Rhodesia."

A fine forest tree, native to Lower Guinea and the Mozambique district, with a trunk often 2 feet in diameter. The kidney-shaped seeds are most extraordinary, the testa being deeply wrinkled with large resinous glands like blisters. This tree is the ironwood of the country, abundant in dry clay plains, forming large monotonous shadeless forests. The leaves fold up at the junction of the leaflets and turn down at the node; they are thus shadeless during the dry season at noon. The excellent resin-colored blood-red wood is called "*Sangue de Drago false*;" it is heavy, durable, and difficult to work. (Adapted from *Oliver, Flora of Tropical Africa*, vol 2, p. 315, and *Hiern, Catalogue of Welwitsch's African Plants*, pt. 1, p. 303.)

48247. DIOSCOREA sp. Dioscoreaceæ.

Yam.

"(No. 74.) Bulbils from Victoria Falls."

48248. DIPLORHYNCHUS MOSSAMBICENSIS Benth. Apocynaceæ.

"(No. 55.) A small tree which yields a rubber in quantity but of doubtful quality. The tree is plentiful, but not many were seen bearing fruit. From Rhodesdale, on a magnesian dike."

"Native to Lower Guinea, the Belgian Kongo, and Mozambique district." (*Oliver, Flora of Tropical Africa*, vol. 4, pt. 1, p. 107.)

48249. FLACOURTIA sp. Flacourtiaceæ.

"(No. 88.) A thorny evergreen tree with edible fruits, from Cataract Island, Zambezi River."

48250. GOSSYPIUM sp. Malvaceæ.

"(No. 63.) A small tree from Matoppo Hills, Matabeleland."



THE MAHOGANY BEAN, A VALUABLE AFRICAN TIMBER TREE. PAHUDIA QUANZENSIS WELW. PRAIN, S. P. I. No. 48253.

This tree, sometimes called "Rhodesia mahogany," but is of quite a different genus. As an ornamental tree it may have value for shade, but its flowers are very attractive in appearance, and the handsomely marked leaves are used for fences. The tree is probably somewhat drought resistant, not particular as to soil, and may find a little fruit after a heavy rain or a few days. Photographed by Dr. H. B. Shantz, Lourenco Marques, Mozambique, October 25, 1910. 1-5561 S.

48230 to 48261—Continued.

48251. *KIRKIA ACUMINATA* Oliver. Simaroubaceæ.

"(No. 65.) A deciduous tree which grows readily from poles planted in the ground during the rainy season. It is common near Bulawayo and north to Broken Hill."

A glabrous tree with compound leaves, 6 inches to 1 foot long, clustered at the ends of the branches. The numerous flowers are in broad leafy panicles and are followed by dry 4-angled fruits which separate into four cocci suspended from a persistent carpophore. Native to Mozambique district. (Adapted from Oliver, *Flora of Tropical Africa*, vol. 1, p. 311.)

48252. *LONCHOCARPUS CAPASSA* Rolfe. Fabaceæ.

(*L. violaceus* Oliver.)

"(No. 60.) *Clitamuzi*, i. e., kraal-spoiler, because the wood is not considered suitable for brush kraals. From Bulawayo, Matabeleland."

A tree 20 to 30 feet high, with leaves toward the ends of the branches and twigs. The purplish pink sweet-scented flowers are in dense racemes. Native to Mozambique and Abyssinia. (Adapted from Harvey and Sonder, *Flora Capensis*, vol. 2, 263, and Hiern, *Catalogue of Welwitsch's African Plants*, pt. 1, p. 281.)

48253. *PAHUDIA QUANZENSIS* (Welw.) Prain. Cæsalpiniaceæ.

(*Afzelia quanzensis* Welw.)

Mahogany bean.

"(No. 66.) *Mukamba*, *micandi*. A deciduous tree from Victoria Falls."

An unarmed tree, 15 to 30 feet in height, with coriaceous leaflets and large papilionaceous flowers. Native to Lower Guinea, south-central Africa, and the Mozambique district. (Adapted from Oliver, *Flora of Tropical Africa*, vol. 2, p. 302.)

For previous introduction, see S. P. I. No. 12360.

An illustration of this tree is shown in Plate VII.

48254. *PENNISETUM* sp. Poaceæ.

Grass.

"(No. 87.) *Vleis* [temporary lakes] near Shangani, southern Rhodesia."

48255. *PSEUDOLACHNOSTYLIS* sp. Euphorbiaceæ.

"(No. 83.) Said to be poisonous. From Victoria Falls."

48256. *PTEROCARPUS ANGOLENSIS* DC. Fabaceæ.

"(No. 64.) *Mukwa*, *um vagazi*. *Kajat* from granitic kopjes [hillocks] Matoppo Hills, Matabeleland. Valuable timber which grows well from cuttings or poles stuck in the ground during the wet season; poles cut off and planted about 8 years ago are now trees about 1 foot in diameter. Something like 60 per cent of the cuttings are said to strike."

48257. *RICINODENDRON RAUTANENII* Schinz. Euphorbiaceæ.

"(No. 67.) *Megongo*, *n'goma*. A handsome large deciduous tree, with smooth bark of a purplish brown tint. Sometimes called the *Zambezi almond*. The nuts are said to be edible; the shell is very hard, and the seed is said to be most difficult to germinate. From the Zambezi basin at Victoria Falls."

48230 to 48261—Continued.

The *Manketti* [or megongo] nuts are the product of a euphorbiaceous tree which grows in the South African veld, forming vast forests near the Omaramba River. The kernels of the nuts are oily and are eaten by the natives. The kernels yielded 57.2 per cent of bright-yellow liquid oil, which had a saponification value of 191.5 and an iodine value of 133.6 per cent; it is therefore a semidrying oil. It appears that this oil can be used for food. It is, however, very difficult to extract the kernels, owing to the softness of the latter and the extreme hardness of the shells.

The pulpy mesocarp should have a moderate nutrient value, but trials would be necessary before it could be definitely recommended as a cattle feed. Its composition is as follows: Moisture, 16.6 per cent; crude protein (of which 6.5 is true protein and 1.4 other nitrogenous substances), 7.9 per cent; fat, 1.62 per cent; carbohydrates, etc. (by difference), 65.4 per cent; cellulose, 3.0 per cent; ash, 5.5 per cent. Nutrient ratio, 1:8.6; food units 89. (Adapted from *The International Review of the Science and Practice of Agriculture*, January, 1918.)

48258. *TERMINALIA SERICEA* Burchell. Combretaceæ.

"(No. 69.) From Victoria Falls."

A tree attaining a height of 82 feet, with a dense round or flat-topped crown and silvery silky leaves and inflorescence. It is a widely distributed and variable species, extending along the southeastern coast of Africa, Bechuanaland, German Southwest Africa, and Angola. It is known as *napini*, or *gum-copal tree*. The wood is very hard, burns well, and is described as oily; it is said to make good posts, durable underground, only the sapwood, of which there is very little, being eaten by termites, or "white ants." The heartwood is yellow, with darker streaks; it takes a good surface and shows well under varnish; it is used for furniture, agricultural implements, carts, and domestic utensils. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 53, p. 67.)

48259. *TERMINALIA* sp. Combretaceæ.

"(No. 98.) From basaltic formation near Victoria Falls."

48260. *XYLOPIA* sp. Annonaceæ.

"(No. 92.) Fruit said to be edible. From Victoria Falls."

48261. *ZIZIPHUS MUCRONATA* Willd. Rhamnaceæ.

"(No. 58.) A good, hard timber from Bulawayo, Matabeleland, making good, durable fence posts. The fruit is edible."

An edible-fruited tree, 20 to 30 feet in height, native to Upper and Lower Guinea, Abyssinia, and the Mozambique district. The fruit is said to be used for making bread which tastes like gingerbread and also for the preparation of a pleasant beverage. In South Africa a paste made of the leaves is applied to glandular swellings. A decoction of the root is used in lumbago and taken internally for all scrofulous diseases and for swollen glands of the neck.

The wood is tough and used chiefly for wagon work. The seeds are used by Mussulmans for rosaries. In Cape Colony the plant is sometimes used for hedges. It requires deep alluvial soil. (Adapted from *Holland, Useful Plants of Nigeria*, p. 162, and *Oliver, Flora of Tropical Africa*, vol. 1, p. 380.)

48262 to 48282.

From Darjiling, India. Presented by Lieut. Col. A. T. Gage, director of the Botanical Survey of India, through Mr. G. H. Cave, curator, Lloyd Botanic Garden, Darjiling. Received October 21, 1919.

48262. BASELLA RUBRA L. Basellaceæ.

A succulent, herbaceous, freely branched climber, native to Bengal, and cultivated throughout India. It is sometimes spoken of as the Malabar nightshade. The juice of the leaves is used in native medicine for catarrhal affections of children, and the leaves and stems are used as a potherb (made into a curry) by natives of all classes. Scarcely a village exists, in Bengal at least, where a hedgerow covered with this favorite potherb may not be seen. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 404.)

For previous introduction, see S. P. I. No. 45026.

48263. BUCKLANDIA POPULNEA R. Br. Hamamelidaceæ.

An evergreen tree, attaining a height of 80 feet, native to the eastern Himalayas, Khasi Hills, and the hills of Martaban, at altitudes of 3,000 to 8,000 feet. The wood is rough, grayish brown, moderately hard, close grained, and durable. It is much used in Darjiling for planking and for door and window frames. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 545.)

For previous introduction, see S. P. I. No. 47649.

48264. BUDDLEIA ASIATICA Lour. Loganiaceæ.

A large evergreen shrub, native to Bengal, Burma, and southern India, ascending to altitudes of 4,000 feet, chiefly found in second-growth forests, deserted village sites, and savannas. The young branches are tomentose; the leaves, 2 to 4 inches long, are glabrous above, whitish tomentose beneath; the small white odorous flowers are borne in dense axillary spikes. The wood is gray and moderately hard. (Adapted from Cooke, *Flora of Bombay*, vol. 12, p. 183, and Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 546.)

For previous introduction, see S. P. I. No. 47650.

48265. CLEMATIS NAPAULENSIS DC. Ranunculaceæ. Clematis.

A slender, nearly glabrous, woody climber, native to the temperate Himalayas from Gurhwal to Bhutan. The flowers are numerous on short pedicels which bear, at the middle, connate bracts forming a 2-lipped cup in which the bud is sessile. These 4-petaloid oblong sepals are silky outside. The flat, margined achenes are hairy. (Adapted from Hooker, *Flora of British India*, vol. 1, p. 2.)

48266. DENDROCALAMUS HAMILTONII Nees. and Arn. Poaceæ. Bamboo.

The common bamboo of northern Bengal and Assam, with culms sometimes attaining a height of 80 feet, much curved and bent, forming thickets of nearly impenetrable growth. They are used for building purposes and for making mats and baskets. The young shoots are eaten in Sikkim. The flowers are purple; and sporadically flowering clumps, especially from injured specimens, are common. (Adapted from Gamble, *Manual of Indian Timbers*, p. 752.)

For previous introduction, see S. P. I. No. 43287.

48262 to 48282—Continued.

48267. *DILLENIA PENTAGYNA* Roxb. Dilleniaceæ.

A conspicuous deciduous tree, found in dry forests and open grasslands, as well as in the more open sal forests in northern India. Except the teak, perhaps, it has the largest leaves of any of the Indian forest trees, for they often reach 2 feet in length. The flowers, which appear in the hot season, are yellow, in fascicles on the branches, and the fruit is small and fleshy. The flower buds and fruit are eaten and have a pleasant acid flavor. The leaves are sometimes used for plates, and for thatching huts. The wood is durable and has much the character of beech; it makes good charcoal; it is used for construction purposes, for posts, joists, etc. (Adapted from *Gamble, Manual of Indian Timbers*, p. 6.)

For previous introduction, see S. P. I. No. 39109.

48268. *DUABANGA SONNERATIODES* Buch.-Ham. Lythraceæ.

A lofty deciduous tree, with light-brown bark which peels off in thin flakes; native to Assam, Chittagong, Burma, Nepal, and eastern Bengal (ascending to 3,000 feet). The gray, yellow-streaked wood is soft, seasons well, takes a good polish, and neither warps nor splits. Canoes cut out of the green wood are used at once, even when liable alternately to wet and the heat of the sun. In northern Bengal and Assam it is now very extensively used for tea boxes; it is also made into cattle troughs and other ordinary domestic utensils. The seeds are small, but germinate freely, so that for planters this is one of the most useful of trees. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 3, p. 196.)

48269. *ERIANTHUS HOOKERI* Hack. Poaceæ.

Grass.

A tall perennial grass with a large, silky, densely branched panicle of villous, rusty-red spikelets; native to the Sikkim Himalayas, Bhutan, and Calcutta. (Adapted from *Hooker, Flora of British India*, vol. 7, p. 125.)

48270. *GYNURA NEPALENSIS* DC. Asteraceæ.

A tall, handsome shrubby species, hoarily pubescent, leafy, with many corymbose heads of yellowish or purplish flowers. The leaves are 3 to 7 inches long and hoary pubescent on both surfaces. Native to the temperate Himalayas from Kumaon to Bhutan at altitudes ranging from 2,000 to 5,000 feet and in the mountains near Moulmein, at Martaban at altitudes of 4,000 to 5,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 333.)

For previous introduction, see S. P. I. No. 39116.

48271. *LOBELIA PYRAMIDALIS* Wall. Campanulaceæ.

Lobelia.

An herb, 2 to 7 feet in height, native to the Khasi Mountains, Pegu, and at altitudes ranging from 3,000 to 9,000 feet in the Himalayas from Gurhwal eastward. The widely branched stem bears glabrous linear leaves and many-flowered racemes of purple-rose or whitish flowers. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 426.)

For previous introduction, see S. P. I. No. 47707.

48272. *MAESA CHISIA* D. Don. Myrsinaceæ.

An evergreen shrub or small tree, with thin reddish bark and soft light-brown wood, common over large areas of country in the Darjiling Hills, coming up gregariously on hill slopes which have at one time

48262 to 48282—Continued.

been cultivated and then abandoned. For affording protection to planted trees of more valuable timber, put out in lines or in patches cut in the shrubby growth, I can imagine nothing better. Native to the eastern Himalayas, from Nepal to Bhutan, at 4,000 to 6,000 feet, and in the Khasi Hills at 3,000 to 5,000 feet. (Adapted from *Gamble, Manual of Indian Timbers*, p. 438.)

For previous introduction, see S. P. I. No. 47711.

48273. *MICROMELUM PUBESCENS* Blume. Rutaceæ.

A small evergreen tree, native to eastern and northern India, Ceylon, and the Andamans. The bark is thin and white, and the hard close-grained wood is yellowish white. (Adapted from *Gamble, Manual of Indian Timbers*, p. 125.)

48274. *OSBECKIA STELLATA* Don. Melastomaceæ.

An ornamental shrub from 2 to 7 feet high, with reddish branchlets and membranous leaves 2 to 6 inches in length. The delicately beautiful lilac-rose flowers have four ovate ciliate petals $1\frac{1}{2}$ inches across. The conspicuous stamens are incurved, and the calyx tube is pale green with green-stalked stellate hairs, each bearing eight reddish rays. (Adapted from *Curtis's Botanical Magazine*, pl. 8500.)

For previous introduction, see S. P. I. No. 39126.

48275. *PREMNA SCANDENS* Roxb. Verbenaceæ.

A tree 20 to 40 feet in height, or a large climber, native to northeast Bengal, Sikkim, Bhutan, and Assam. The leaves are 11 inches long and 4 inches wide, borne on short petioles. The small greenish or yellowish flowers are in 4-inch to 10-inch lax, dense, compound corymbs. The small globose drupes are tubercled. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 573.)

48276. *PRUNUS CERASOIDES* D. Don. Amygdalaceæ.

(*P. puddum* Roxb.)

A large deciduous tree, with brilliant rose-red or white flowers, native to the Himalayas from the Indus to Assam, between 2,500 and 7,000 feet, to the Khasi Hills, and to the hills of Upper Burma. It is often cultivated. The brown shining bark peels off in thin horizontal layers and the moderately hard, scented wood has a pretty shining silver grain. The wood is used in the Punjab Himalayas for walking sticks, which are made from saplings or from root suckers; in Darjiling it is occasionally used for furniture. The seeds are strung in rosaries. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 314, and *Gamble, Manual of Indian Timbers*, p. 313.)

48277. *RUBIA CORDIFOLIA* L. Rubiaceæ.

Madder.

A herbaceous perennial which grows abundantly in the Punjab Himalayas from 3,200 to 10,000 feet, and in the Sulliman Range. Like the European madder, the root furnishes a red dye, a mixture of alizarin and purple bronze but less lasting than that of the European madder. It is considered astringent, purgative, emetic, and useful in skin diseases. The fleshy fruit is used to overcome obstructions of the liver. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises*, p. 625, and *Stewart, Punjab Plants*, p. 116.)

For previous introduction, see S. P. I. No. 47780.

48262 to 48282—Continued.

48278. RUBUS ELLIPTICUS J. E. Smith. Rosaceæ. **Raspberry.**

A large thorny shrub, native to all Indian hill regions over 4,000 feet. The fruit is yellow and has the flavor of the raspberry; it is commonly eaten out of hand and is also made into preserves in the Himalayas; it is one of the best of the wild fruits of India. (Adapted from *Gamble, Manual of Indian Timbers*, p. 317.)

For previous introduction, see S. P. I. No. 47781.

48279. THYSANOLAENA MAXIMA (Roxb.) Kuntze. Poaceæ. **Grass.**

A large grass, with broad bamboolike leaves and dense panicles of very small flowers, found in shady places in the forests almost throughout India. The leaves are used for fodder and the flower panicles for brooms, especially in Hindu temples. (Adapted from *Gamble, Manual of Indian Timbers*, p. 742.)

For previous introduction, see S. P. I. No. 14922.

48280. TRACHYCARPUS EXCELSUS (Thunb.) Wendl. Phœnicaceæ.

"The Chinese fan or coir palm, cultivated in gardens in southern Shensi and southern Kansu as an ornamental tree, reaches a height of 30 to 40 feet. Withstands successfully winter temperatures, unprotected of -12° C., as happened in Huihsien on November 1, 1895, when all the palms around there died. Of value as a fine ornamental garden and park tree for all such parts of the United States where the mercury does not go much below 10° F. Chinese name *Taung shu*, meaning 'coir-palm tree.'" (*Frank N. Meyer.*)

For previous introduction, see S. P. I. No. 44670.

48281. TRACHYCARPUS MARTIANUS (Wall.) Wendl. Phœnicaceæ.

A tall unarmed, fan-leaved palm, native to the temperate Himalayas from Nepal eastward, the Khasi Hills, Munnipore, and Burma, all at altitudes above 4,000 feet. The slender trunk, 20 to 30 feet tall, is for the most part naked annulate, clothed beneath the crown with persistent leaf sheaths; the young parts are covered with soft scurfy hairs. The rigidly leathery leaves, 4 to 5 feet in diameter, are cut about half way down into linear 2-lobed segments; the petiole is $1\frac{1}{2}$ to $2\frac{1}{2}$ feet long, the sheath leaving stiff erect fibers. The nodding spadix bears yellow flowers; the pistillate flowers are sessile and solitary. The bluish drupe is half an inch long. (Adapted from *Hooker, Flora of British India*, vol. 6, p. 436.)

For previous introduction, see S. P. I. No. 47814.

48282. TRIUMFETTA TOMENTOSA Boj. Tiliaceæ.

An herb or undershrub with a hispid stem and variable leaves, 4 by 3 inches, stellate hairy above, pubescent beneath. The yellow flowers are in dense interrupted spikes and the hispid fruit, the size of a large pea, is covered with straight spines. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 394.)

For previous introduction, see S. P. I. No. 47818.

48283 to 48285.

From Lamac, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser, Lamac Experiment Station. Received October 25, 1919. Quoted notes by Mr. Wester.

48283. CITRUS HYSTRIX DC. Rutaceæ.**Cabuyao.**

"Seed of a variety of *Citrus hystrix*, with oblate and very juicy fruits. It is very resistant to the citrus canker and should therefore be of more than ordinary value in breeding canker-resistant citrus fruits."

For previous introduction and description, see S. P. I. No. 40824.

48284. FLACOURTIA JANGOMAS (LOUR.) Gmel. Flacourtiaceæ. Paniála.
(*F. cataphracta* Roxb.)

"A small spiny tree, the fruits of which may be made into an excellent jelly. It should prove hardy in southern Florida."

48285. SPONDIAS PINNATA (L.) Kurz. Anacardiaceæ.
(*S. mangifera* Willd.)**Lanno.**

"Should prove hardy in southern Florida."

A rather tall deciduous tree of wide distribution, bearing yellowish, sweet, edible fruits, about the size of a large cherry. It is rare in cultivation. (Adapted from *The Philippine Agricultural Review*, vol. 9, p. 230.)

48286. FRAGARIA DALTONIANA J. Gay. Rosaceæ. Strawberry.

From Calcutta, India. Presented by Mr. Percy Lancaster. Received October 25, 1919.

A somewhat hairy, slender perennial herb, with filiform runners and petiolulate few-teethed leaflets. The solitary white flowers are followed by curious, bright-scarlet fruits an inch long and half an inch broad, with but little flavor. Native to the Sikkim Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 345.)

48287 to 48289.

From Cape Town, Cape Province. Collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received October 26, 1919. Quoted notes by Dr. Shantz.

48287. SOLANUM ACULEASTRUM DuRoi. Solanaceæ.

"(No. 22. Cape Town. August 24, 1919.) A large, coarse-fruited, prickly shrub, 8 feet high, with fruits 2 inches in diameter. The natives use bits of the fruit for allaying toothache in hollow teeth."

48288. SOLANUM SODOMEUM HERMANNI Dun. Solanaceæ.

"(No. 23. Cape Town. August 24, 1919.)" A shrubby, spiny *Solanum* with purple flowers followed by globose fruits 1½ inches in diameter, which are at first green variegated with white, and finally yellow. Native to Europe. (Adapted from *Thielsen-Dyer, Flora Capensis*, vol. 4, sec. 2, p. 96.)

48289. SOLANUM sp. Solanaceæ.

"(No. 36. Kirstenbosch, Cape Province. August 25, 1919.) A large-fruited *Solanum*; smooth fruit."

48290 to 48301. MANIHOT ESCULENTA Crantz. Euphorbiaceæ.*(M. utilisissima Pohl.)***Cassava.**

From Antigua, British West Indies. Cuttings presented by the curator, Botanic Station, Tortola, Virgin Islands. Received October 27, 1919.

48290. *Bitter.*48296. *Pacho 3.*48291. *Blancita.*48297. *Pacho 4.*48292. *French.*48298. *Paloma.*48293. *Helada 15.*48299. *Red Greenaway.*48294. *Negrita.*48300. *Rodney.*48295. *Negrita 12.*48301. *White Greenaway.***48302. ERIOBOTRYA JAPONICA (Thunb.) Lindl. Malaceæ. Loquat.**

From Altadena, Calif. Budwood collected by Wilson Popenoe, Agricultural Explorer of the Bureau of Plant Industry. Received October 30, 1919.

"*Tanaka*. This excellent loquat was introduced into the United States some years ago by Dr. Fairchild, but the material obtained by him has apparently been lost, and the buds sent herewith have been taken from a tree growing at the West India Gardens, which was grown from budwood sent from Algeria by Dr. L. Trabut in 1911. *

"*Tanaka* is a large loquat, noted for its fine flavor and excellent keeping qualities. It is oval or nearly round in form, deep orange in color, with meaty orange-colored flesh. The season of ripening is late, and it is probably because of this that the variety has not been planted commercially in California. In recent years, however, it has become apparent that some of the late-fruiting varieties, such as *Thales* (considered by some to be identical with *Tanaka*, and certainly very closely allied to this variety), may be cultivated profitably, if in a region well suited to their growth." (*Popenoe*.)

48303. ASPARAGUS sp. Convallariaceæ.

From Kenkelbosch, Cape Province. Roots collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received October 31, 1919.

"(No. 73. September 8, 1919.) A broad-leaved, nonspiny form valuable for decoration. An unusually pretty and attractive vine, abundant in the 'bush,' where the soil is dry for many months in the year." (*Shantz*.)

48304 to 48426.

From China. Collected by Mr. G. Forrest and presented by Mr. H. J. Elwes, Colesborne, England. Numbered October 31, 1919. Quoted notes by Mr. Forrest.

"The 'A' numbers are the serial numbers under which the seeds were sent out. Where a Forrest number is also given, Mr. Forrest had reason to suppose that the seed was that of a plant similar to one from which he had taken herbarium specimens perhaps at a considerably earlier date." (Extract from letter of the Director of Laboratory, Royal Horticultural Society Gardens, October 5, 1920.)

48304. ARDISIA CRISPA A. DC. Myrsinaceæ.

"A 842. Forrest No. 13687."

A red-fruited shrub, 10 to 20 feet in height, found with oak scrub at altitudes ranging from 6,000 to 7,000 feet, near Luchang, northwest Yunnan, China. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 7, p. 52.)

48304 to 48426—Continued.

48305. *BUDDLEIA CARYOPTERIDIFOLIA* W. W. Smith. Loganiaceæ.

"A 841."

A shrub, 5 to 6 feet high, native to western China. The foliage is remarkable because of the large irregular crenations of the leaves; the attractive flowers are pale lavender. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 8, p. 179.)

48306. *BUDDLEIA GLABRESCENS* W. W. Smith. Loganiaceæ.

"A 843."

A robust shrub, 4 to 9 feet high, with fragrant deep blue-lavender flowers with rose-tinged tubes and throats. It is a native of Yunnan, China, where it grows in open situations at altitudes of 8,000 to 9,000 feet. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 9, p. 85.)

48307. *CLEMATIS STANLEYI* Hook. Ranunculaceæ.

Clematis.

An erect shrubby clematis from the Transvaal, with very variable foliage and flowers. In the native state the flower stems are 2 to 3 inches long, while in cultivation they reach a length of 8 to 10 inches; the flowers vary from 1 to nearly 3 inches in diameter, and in color from white to pinkish purple. The roots are fleshy. (Adapted from *Curtis's Botanical Magazine*, pl. 7166.)

48308. *DAPHNE PAPHRACEA* Wall. Thymelæaceæ.

"A 10. Forrest No. 13769."

A shrub 4 to 8 feet high, growing with scrub in side valleys on the eastern flank of the Tali Range at altitudes between 9,000 and 10,000 feet, western Yunnan, China. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 7, p. 258.)

48309. *GAULTHERIA FRAGRANTISSIMA* Wall. Ericaceæ.

"A 844. Forrest No. 16622."

A very fragrant evergreen shrub or small tree, found in the mountains of India from Nepal eastward to Bhutan. In summer it is covered with white or pinkish flowers which are followed by beautiful racemes of blue-purple fruits. (Adapted from *Curtis's Botanical Magazine*, pl. 5984.)

48310. *LONICERA HENRYI* Hemsl. Caprifoliaceæ.

Honeysuckle.

"A 716. Forrest No. 14955."

"*Lonicera henryi* is a native of western China and is valuable and interesting, for, with the exception of *Euonymus radicans* and *Vinca minor*, it is the only vine with evergreen leaves which is hardy in this climate. It has long dark-green pointed leaves and axillary clusters of flowers which are rose colored when they first open, but soon become orange-red; they are without odor. On the slopes of its native mountains this plant clammers over rocks and bushes; and, like other clinging honeysuckles, it will do best when allowed to grow naturally in this way." (*Arnold Arboretum Bulletin of Popular Information*, July, 1916.)

48311. *LONICERA PILEATA* Oliver. Caprifoliaceæ.

Honeysuckle.

"A 713. *Lonicera ligustrina yunnanensis*. Forrest No. 15327."

This form is now referred to *L. pileata*, differing from the species, according to Mr. Rehder, only in the very small suborbicular to broadly

48304 to 48426—Continued.

ovate, thickish leaves. *L. pilcata* is a much-branched, low, evergreen shrub from central and western China, about 1 foot high, with slender branches, oblong-lanceolate dark-green leaves, half an inch to an inch long, and pale-yellow flowers in almost sessile pairs. (Adapted from *Curtis's Botanical Magazine*, pl. 8060.)

48312. *LORANTHUS* sp. Loranthaceæ.

Mistletoe.

"A 720."

48313. *MECONOPSIS EXIMIA* Prain. Papaveraceæ.

"A 735. Forrest No. 15089."

A very handsome biennial with nodding, deep blue-purple flowers which have grayish yellow anthers. It is found in open stony pasture lands in southeastern China at altitudes ranging from 12,000 to 14,000 feet. (Adapted from *Kew Bulletin of Miscellaneous Information*, 1915, p. 159.)

48314. *MECONOPSIS HENRICI* Bur. and Franch. Papaveraceæ.

"A 733. Forrest No. 14234."

An annual or biennial low poppylike plant from western China with numerous scapes which bear large purple-violet flowers about 3 inches across, with orange anthers. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 4, p. 2019.)

48315 to 48318. *MECONOPSIS INTEGRIFOLIA* (Maxim.) Franch. Papaveraceæ.

A hardy stout-stemmed biennial, from 1½ to 3 feet high, native to Yunnan and the northwestern part of Kansu, China, where it ascends to an altitude of 13,000 feet. The plant is densely clothed with long, silky, yellowish brown hairs. The numerous linear-lanceolate leaves are 6 inches to a foot long, and the beautiful yellow flowers are 5 or 6, or sometimes even 10, inches in diameter. (Adapted from *Curtis's Botanical Magazine*, pl. 8027.)

48315. "A 723. From the Mekong-Salwin Divide."

48316. "A 730. Type."

48317. "A 731. From Tali Shan."

48318. "A 734. Forrest No. 14678."

48319. *MECONOPSIS PSEUDOINTEGRIFOLIA* Prain. Papaveraceæ.

"A 14."

A biennial Chinese poppy, from 1 to 3 feet in height, with 1-flowered scapes bearing very large, bright-yellow flowers from 4 to 8 inches across. It comes originally from southwestern Tibet. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 4, p. 2018.)

48320. *MECONOPSIS RUDIS* Prain. Papaveraceæ.

"A 727."

One of the so-called *blue poppies* which impart a curious charm to the stony alpine tracts in southwestern China at altitudes ranging from 11,000 to 16,000 feet. The plant reaches a height of 1 to 3 feet and has prickly leaves and stems; the attractive flowers, in racemelike cymes, are bright blue or purplish blue, and over 2 inches wide. (Adapted from *Curtis's Botanical Magazine*, pl. 8568.)

48304 to 48426—Continued.

48321. *MECONOPSIS SPECIOSA* Prain. Papaveraceæ.

"A 726."

A very fine Chinese species, of which Mr. George Forrest says in *Gardeners' Chronicle* (3d ser., vol. 63, p. 310): "The only species in Yunnan which is scented. It is deliciously fragrant, the fragrance resembling that of our own Dutch hyacinths."

48322. *MECONOPSIS WALLICHII* Hook. Papaveraceæ.

"A 736. Forrest No. 15883."

A beautiful hardy biennial from the mountains of Sikkim, India, where it raises its glorious pyramids of mauve-colored flowers to a height of 7 feet or more. In winter the well-developed gray-green rosettes of leaves are very attractive. (Adapted from *The Garden*, vol. 79, p. 175.)

48323. *MECONOPSIS* sp. Papaveraceæ.

"A 724."

48324. *MECONOPSIS* sp. Papaveraceæ."A 725. Related to *M. speciosa*."48325. *MECONOPSIS* sp. Papaveraceæ."A 728. Related to *M. henrici*."48326. *MECONOPSIS* sp. Papaveraceæ."A 729. Related to *M. lancifolia*."48327. *MECONOPSIS* sp. Papaveraceæ.

"A 732. Forrest No. 14118."

48328 and 48329. *MELIOSMA CUNEIFOLIA* Franch. Sabiaceæ.

A graceful deciduous shrub from Yunnan, China, where it is found in the Lichiang Mountains at altitudes of 8,500 to 10,000 feet above the sea, in open sunny situations. It reaches an average height of about 24 feet, has long narrow leaves, and fragrant, soft, creamy-white flowers which are produced in great abundance. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 59, p. 279.)

48328. "A 739. Forrest No. 14873."

48329. "A 740."

48330. *MILLETTIA* sp. Fabaceæ.

"A 703."

48331. *NEILLIA* sp. Rosaceæ.

"A 746. Forrest No. 14342."

48332. *OSMANTHUS DELAVAYI* Baill. Oleaceæ.

"A 838. Forrest No. 15373."

A beautiful evergreen shrub from southwestern China, whose dense axillary clusters of pure-white fragrant flowers render it a decidedly attractive ornamental. The dark-green ovate leaves are an inch or so long and have serrate margins. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 55, p. 257.)

48333 and 48334. *OSTRYOPSIS DAVIDIANA* Decaisne. Betulaceæ.

A deciduous shrub, 3 to 5 feet high, native to North China. It forms a rounded bush resembling a hazel, but has the fruits in clusters of 8 to

48304 to 48426—Continued.

12 at the ends of the twigs. (Adapted from *Bean. Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 116.)

48333. "A 12."

• 48334. "A 840."

48335. *PARASYRINGA SEMPERVIRENS* (Franch.) W. W. Smith. Oleaceæ.
(*Syringa sempervirens* Franch.)

"A 834."

An evergreen shrub, up to 9 feet in height, found originally in thickets in mountainous regions of Yunnan, China, ascending to 12,000 feet above sea level. The foliage is leathery, and the fragrant flowers are light creamy yellow. (Adapted from *Transactions and Proceedings of the Botanical Society of Edinburgh*, vol. 27, p. 96.)

48336 and 48337. *PHILADELPHUS DELAVAYI* L. Henry. Hydrangeaceæ.

Mock orange.

A vigorous Chinese shrub, native to the Province of Yunnan, with large thick leaves. It produces, toward the middle of May, an abundance of pure-white flowers in racemes. On the lower side of each petal is a longitudinal, median, pale-yellow stripe, visible through the transparent petal. This plant is said to be even more hardy than *P. coronarius*. (Adapted from *Revue Horticole*, vol. 75, p. 13.)

48336. "A 835."

48337. "A 837."

48338. *POLYGONUM FORBESTII* Diels. Polygonaceæ.

"A 827. Forrest No. 14425."

A low herbaceous plant with a long creeping rootstock, found on hill-sides in Yunnan, China. It is from 2 to 4 inches in height, and has white or creamy-white flowers. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 5, p. 258.)

48339. *POLYGONUM LICHANGENSE* W. W. Smith. Polygonaceæ.

"A 805."

An erect, somewhat woody plant 2 to 4 feet high, native to Yunnan, China, where it grows on the margins of mixed forests at altitudes of 10,000 to 11,000 feet. The flowers are creamy white. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 8, 197.)

48340. *POLYGONUM POLYSTACHYUM* Wall. Polygonaceæ.

"A 806. Forrest No. 14237."

A shrubby, vigorous perennial from the Himalayas, where it ascends to 14,000 feet. It grows about 5 feet high, and in late autumn produces large terminal panicles of white flowers. It does best in moist places. (Adapted from *Gardeners' Magazine*, vol. 52, p. 929, and from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2742.)

48341. *POLYGONUM* sp. Polygonaceæ.

"A 808."

48342. *POTENTILLA FRUTICOSA* L. Rosaceæ.

"A 803. Forrest No. 14989. A form related to *P. veitchii* but very dwarf."

48343. *POTENTILLA VEITCHII* Wilson. Rosaceæ.

"A 804. Lichiang Range; flowers white."

A charming evergreen shrub of neat rounded habit, 3 to 5 feet in height, native to upland thickets above 6,000 feet altitude, western China.

48304 to 48426—Continued.

The numerous flowers, three-fourths of an inch to 1½ inches wide, are usually solitary at the ends of short twigs. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 50, p. 102.)

48344. *POTENTILLA* sp. Rosaceæ.

"A 798."

48345. *POTENTILLA* sp. Rosaceæ.

"A 799."

48346. *POTENTILLA* sp. Rosaceæ.

"A 800."

48347. *POTENTILLA* sp. Rosaceæ.

"A 801."

48348. *POTENTILLA* sp. Rosaceæ.

"A 802."

48349. *POTENTILLA* sp. Rosaceæ.

"A 836. Forrest No. 15205. A form related to *P. fruticosa*, with deep-orange flowers."

48350. *PRIMULA BATHANGENSIS* Petitm. Primulaceæ.

Primrose.

"A 781. Forrest No. 14247."

A Chinese primula from western Szechwan, China, where it was originally found growing near hot springs. The numerous clusters of yellow flowers are borne on weak scapes and the heart-shaped leaves are intensely green. (Adapted from *Bulletin Herbarium Boissiere*, vol. 8, p. 365.)

48351 and 48352. *PRIMULA BEESIANA* Forrest. Primulaceæ. **Primrose.**

A remarkable Chinese primula, found growing close to the snow line in the mountainous parts of Yunnan. Under favorable circumstances the scape rises to a height of more than 3 feet, and produces its whorls of showy flowers in the early summer. The flowers are a glowing velvety purple with conspicuous yellow eyes. The plant is very free flowering and quite hardy. (Adapted from *Bees, Guaranteed Hardy Plants*, 1913-14, p. 11.)

48351. "A 789. Forrest No. 15359."

48352. "A 762."

48353. *PRIMULA BELLA* Franch. Primulaceæ.

Primrose.

"A 771. From Tali Range."

In damp, sandy, mountain pasture land on the Mekong-Salwin Divide, western Yunnan, China, this attractive primula was originally collected. It is little more than 2 inches in height, but bears beautiful pale-rose or deep bluish rose flowers with greenish white eyes, faintly fragrant. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 4, p. 225.)

48354. *PRIMULA BULLEYANA* Forrest. Primulaceæ.

Primrose.

"A 747. Lichiang Range."

This beautiful Chinese primula comes from the Lichiang Mountains in Yunnan, where it grows nearly to the snow line. It forms a stout plant, covered, at the end of May and the beginning of June, with splendid orange-scarlet flowers; the stems of these flowers reach a length of 20 inches, making them excellent for cut flowers. This plant prefers a semi-

48304 to 48426—Continued.

shaded, damp situation, and appears to be entirely hardy. (Adapted from *Bees, Guaranteed Hardy Plants, 1913-14, p. 11.* and from *Florists' Exchange, vol. 36, p. 996.*)

48355. PRIMULA CALLIANTHA Franch. Primulaceæ.

"A 776. Forrest No. 15795."

A plant from 4 to 9 inches in height, with fragrant flowers which are deep rose-lavender with a green, thick, and fleshy eye and tube. The plant thrives in moist, open situations on mountain meadows on the summit of the Tali Range, at altitudes of 12,000 to 13,000 feet, in western Yunnan, China, from September through October. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh, vol. 7, p. 84.*)

48356. PRIMULA sp. Primulaceæ.

"A 782. Forrest No. 14403."

Received as *Primula chrysopa*, for which a place of publication has not been found.

48357. PRIMULA DELAVAYI Franch. Primulaceæ.

Primrose.

"A 756. From Tali Shan."

A primula from southwestern China, with thin, papery, roundish leaves about 3 inches long, which appear after the flowers. The bright-purple hairy flowers are borne on 1-flowered, densely hairy scapes which are loosely enveloped up to the middle with brownish, very broad scales. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2797.*)

48358 and 48359. PRIMULA DRYADIFOLIA Franch. Primulaceæ.

Primrose.

A smooth, small-leaved Chinese primula, with long scapes bearing clusters of three to five nearly sessile, violet flowers. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2799.*)

48358. "A 783. Forrest No. 14814."

48359. "A 785. Forrest No. 15160."

48360. PRIMULA DUBERNARDIANA Forrest. Primulaceæ.

Primrose.

"A 780. Forrest No. 14232."

A handsome primula from southeastern Tibet, where it forms dense cushions 1 to 2 feet in diameter, in dry situations on the ledges and in the clefts of mountain cliffs, at altitudes ranging from 8,000 to 9,000 feet. The flowers are a beautiful shade of pale rose, with bright-yellow eyes. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh, vol. 4, p. 221.*)

48361. PRIMULA FORRESTII Balf. f. Primulaceæ.

Primrose.

"A 749. From Lichiang Range."

A handsome primula found originally in the mountains of northwestern Yunnan, China, at altitudes of 9,000 to 11,000 feet. The foliage is densely coated with glandular hairs, and in the fresh state has a peculiar, but not unpleasant, aromatic odor. The flowers are large and numerous, of a deep shade of orange, and fragrant. The plant is said to be hardy but can not stand dampness, being adapted to sunny and dry situations. In its native country it is found in greatest luxuriance in the crevices and on the ledges of dry limestone cliffs. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 45, p. 274.*)

48304 to 48426—Continued.

48362. PRIMULA FRANCHETII Pax. Primulaceæ.

Primrose.

"A 774. Forrest No. 14065."

A plant found in moist rocky situations on mountain meadows, at altitudes ranging from 10,000 to 12,000 feet, on the Mekong Salwin Divide to the northwest of Tsekou Mission, southeastern Tibet. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 7, p. 51.)

48363. PRIMULA GIRALDIANA Pax. Primulaceæ.

Primrose.

(P. muscarioides Hemsl.)

"A 769."

A Chinese primula originally found in open grassy situations in the mountains of Yunnan. The rather fleshy, light-green crenate leaves are 4 to 5 inches long, and the purplish blue or almost violet flowers occur in densely capitate spikes. (Adapted from *Curtis's Botanical Magazine*, pl. 8168.)

48364. PRIMULA LICHANGENSIS Forrest. Primulaceæ.

Primrose.

"A 772. Forrest No. 13976."

A handsome plant from the Lichiang Mountains, Yunnan, China, where it reaches a height of 6 to 14 inches, growing on ledges and boulders in dry shady places. The fragrant flowers vary from light rose to almost crimson, with greenish yellow eyes. The foliage is very variable. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 50, p. 473.)

48365. PRIMULA LITTONIANA Forrest. Primulaceæ.

Primrose.

"A 770."

A beautiful new primula from Yunnan, China, where it grows on mountain meadows at an altitude of 10,000 to 11,000 feet. From a tuft of grayish green, hairy leaves rises the scape, 1 to 2 feet in length, ending in a dense spike, sometimes 5 inches long. The blood-red bracts and calyxes of the flowers form a wonderful contrast with the purple flowers. The plant is perfectly hardy at the Royal Botanic Garden, Edinburgh. (Adapted from *Gardener's Chronicle*, 3d ser., vol. 46, p. 15.)

48366 to 48369. PRIMULA NIVALIS Pall. Primulaceæ.

Primrose.

An Asiatic primula, found from the Caucasus to the Himalayas, northward to the Baikal and Dahuria regions. The stout scape, 3 to 10 inches in height, bears a many-flowered umbel of erect purple or white flowers. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2808.)

48366. "A 753. Form from Tali Shan."

48367. "A 755. Forrest No. 15383. An undescribed form."

48368. "A 775. Forrest No. 14108. An undescribed form."

48369. "A 779. Forrest No. 14217. An undescribed form."

48370. PRIMULA PINNATIFIDA Franch. Primulaceæ.

Primrose.

"A 787. Forrest No. 15229."

A hardy alpine primula from Yunnan, China, where it grows in grassy places on mountain slopes as high as 12,000 feet above sea level. Almost immediately upon the disappearance of the snow the beautiful blue, fragrant flowers appear. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 4, p. 224.)

48304 to 48426—Continued.

48371 and 48372. PRIMULA PSEUDOSIKKIMENSIS Forrest. Primulaceæ.

Primrose.

This primula from western China differs from *P. sikkimensis* in having shorter leaves and larger flowers. It grows to a height of 12 to 18 inches, and has fragrant, bright canary-yellow flowers. In its native habitat it is found in the crevices and on ledges of limestone cliffs, at altitudes ranging from 11,000 to 12,000 feet. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2807.)

48371. "A 752."

48372. "A 761. From Lichiang Range."

48373. PRIMULA PULCHELLA Franch. Primulaceæ.

Primrose.

"A 777. Forrest No. 15722."

An interesting Chinese primula from Yunnan, from 6 inches to a foot in height, with violet, pale-purple, or lilac flowers with purple calyxes. It is a fine plant for the rockery and prefers peaty or sandy soil. The under sides of the leaves, which are not at their full length until after flowering, are covered with a charming golden farina. (Adapted from *Gardeners' Magazine*, vol. 56, p. 962.)

48374 and 48375. PRIMULA SECUNDIFLORA Franch. Primulaceæ.

Primrose.

This is one of the finest Chinese primulas; it is a native of the Lichiang Mountains in northwestern Yunnan, where it ascends almost to snow level, 15,000 feet above the sea. On the lower plateaus, at 11,500 feet altitude, this plant forms dense colonies, with scapes up to 14 inches in height. The fragrant flowers are a beautiful shade of deep crimson, faintly tinged with purple, and droop gracefully from the scapes. The calyxes are ruddy purple, marked with white lines along the margins. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 51, p. 281.)

48374. "A 767. From Lichiang Range." 48375. "A 768."

48376. PRIMULA SERRATIFOLIA Franch. Primulaceæ.

Primrose.

"A 773. Forrest No. 13959."

A very attractive primula from western China, of which Mr. George Forrest says: "The banks of the streams were covered with the lovely yellow, orange-striped flowers and bright green foliage." (*Gardeners' Chronicle*, 3d ser., vol. 63, p. 32.)

48377 and 48378. PRIMULA SIKKIMENSIS Hook. Primulaceæ. Primrose.

Originally found in the Himalayas of Sikkim, India, this is one of the most elegant of the hardy alpine primulas. The drooping, pale-yellow flowers, borne in umbels on slender scapes, always attract the attention because of their beauty. It is excellent for the rock garden, and thrives best in peaty soil. (Adapted from *Gardeners' Magazine*, vol. 52, p. 869.)

48377. "A 750; type. Lichiang Range."

48378. "A 751; type. From Tali Shan."

48379. PRIMULA SINOPURPUREA Balf. f. Primulaceæ.

Primrose.

"A 778. Forrest No. 14117."

An attractive Chinese primrose, densely covered with a golden farina and bearing large flowers which are violet with white eyes. (Adapted from *Irish Gardening*, May, 1919, p. 77.)

48304 to 48426—Continued.

48380. PRIMULA SPHAEROCEPHALA Balf. and Torr. Primulaceæ.

Primrose.

"A 754."

A delicately perfringed primula from southwestern China, which bears small globular heads of attractive purplish flowers. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2801.*)

48381. PRIMULA VINCELEGRA Frelich. Primulaceæ.

Primrose.

"A 760."

A perennial Chinese primula, discovered originally in the Province of Yunnan. The oblong leaves are sometimes 3½ inches in length, and the 1-flowered scape is about 2 inches long. The large, brilliant purple flowers appear before the leaves in the wild state, but under cultivation both leaves and flowers appear at about the same time. (Adapted from *Curtis's Botanical Magazine, pl. 871½.*)

48382. PRIMULA VITTATA Bur. and Franch. Primulaceæ.

Primrose.

"A 786. Forrest No. 15207."

A herbaceous perennial with long narrow leaves up to 1½ inch in length. The purple flowers are borne on a stout scape about 8 inches long. This primrose is a native of Szechwan and Yunnan, China. (Adapted from *Curtis's Botanical Magazine, pl. 6586.*)

48383. PRIMULA WARDII Balf. f. Primulaceæ.

Primrose.

"A 784. Forrest Nos. 14445 and 14445."

This is a valuable acquisition to horticulture, is one of the freest of growers and seeders, and is most floriferous. It is a foot or slightly more in height and is native to the mountains of Yunnan, China, where it inhabits damp meadows and pastures. The fragrant greenish yellow flowers are blue-eyed. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh, vol. 9, p. 59.*)

48384. PRIMULA sp. Primulaceæ.

Primrose.

"A 788. Forrest No. 15344."

Received as *P. werringtonensis*, for which a place of publication has not been found.

48385. PRIMULA sp. Primulaceæ.

Primrose.

"A 13."

48386. PRIMULA sp. Primulaceæ.

Primrose.

"A 748. *P. nivalis* section."

48387. PRIMULA sp. Primulaceæ.

Primrose.

"A 757. Related to *P. denticulata*; from Tali Range."

48388. PRIMULA sp. Primulaceæ.

Primrose.

"A 758. Related to *P. bella*."

48389. PRIMULA sp. Primulaceæ.

Primrose.

"A 759. A form related to *P. nivalis*; from the Lichiang Range."

48390. PRIMULA sp. Primulaceæ.

Primrose.

"A 763. From Tali Range."

48391. PRIMULA sp. Primulaceæ.

Primrose.

"A 764."

48304 to 48426—Continued.

48392. PRIMULA sp. Primulaceæ. **Primrose.**
 " A 765."
48393. PRIMULA sp. Primulaceæ. **Primrose.**
 " A 766."
48394. PRIMULA sp. Primulaceæ. **Primrose.**
 " A 790."
48395. PRUNUS sp. Amygdalaceæ.
 " A 7."
48396. PRUNUS sp. Amygdalaceæ.
 " A 8."
48397. PRUNUS sp. Amygdalaceæ.
 " A 9."
48398. PRUNUS sp. Amygdalaceæ.
 " A 811."
48399. PRUNUS sp. Amygdalaceæ.
 " A 845."
48400. PYROLA sp. Pyrolaceæ.
 " A 832. Related to *Pyrola forrestii*."
48401. PYRUS sp. Malaceæ.
 " A 819."
48402. PYRUS sp. Malaceæ.
 " A 820."
48403. PYRUS sp. Malaceæ.
 " A 824. From the upper Mekong."
48404. ROETTLERA sp. Gesneriaceæ.
 " A 872. From Tali Range."
48405. ANCYLOSTEMON CONVEXUM Craib. Gesneriaceæ.
 " A 873. Forrest No. 15930."
- A stemless perennial, 48 inches in height, with deep ruddy-orange flowers; found on humus-covered boulders and trees along the eastern flank of the Tali Range, Yunnan, at altitudes of 9,000 to 10,000 feet.
- For full technical description, see Notes from the Royal Botanic Garden, Edinburgh, vol. 11, p. 235.
48406. BRIGGSIA FORRESTII Craib. Gesneriaceæ.
 " A 874. Forrest No. 16096."
- A perennial alpine plant, stemless, with pale rosy purple flowers with a tinge of yellow on the lip; found on moist, shady, moss-covered rock along the Shwelee-Salwin Divide, Yunnan, at an altitude of 10,000 feet.
- For full technical description, see Notes from the Royal Botanic Garden, Edinburgh, vol. 11, p. 237.
48407. ROSA OMEIENSIS PTERACANTHA (Franch.) Rehd. and Wils. Rosaceæ. **Rose.**
 (*R. sericea pteracantha* Franch.)
 " A 878."

A robust, much-branched thorny bush, native to western China, where it grows at altitudes of 3,000 to 11,000 feet. Because of its fine single

48304 to 48426—Continued.

white flowers, large red prickles, and bright-red fruits, this is an exceedingly attractive rose. (Adapted from *Curtis's Botanical Magazine*, pl. 8218.)

48408. *RUBUS ALEXETERIUS* Focke. Rosaceæ.

Bramble.

"A 849. Forrest No. 15334."

A spiny shrub, 4 to 7 feet in height, with arched branches, ternate hairy leaves, white flowers, and large yellow edible fruits. It is a native of the eastern flank of the Lichiang Mountains of western China, where it frequents shady rocky situations in pine forests. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 5, p. 75.)

48409. *RUBUS LINEATUS* Reinw. Rosaceæ.

Bramble.

"A 857."

A very attractive suberect plant with softly pubescent branches and leathery leaves composed of three to five leaflets. It is native to the Himalayas of Sikkim, India, where it grows at altitudes of 6000 to 9000 feet. The white flowers grow in short axillary heads and terminal silvery panicles, and the fruits are small and red. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 333.)

48410. *RUBUS LOROPETALUS* Franch. Rosaceæ.

Bramble.

"A 858."

A small, creeping, woody vine with graceful, erect, flowering stems and trifoliate, finely dentate leaves. Its native home is in the forests of Yunnan, China, at an altitude of 3,200 meters (about 10,000 feet). (Adapted from *Franchet, Plante Delavayana*, p. 263.)

48411. *RUBUS LUTESCENS* Franch. Rosaceæ.

Bramble.

"A 856. Forrest No. 15332."

A small shrub, 9 to 12 inches in height, growing in open grassy places on the eastern slopes of the Lichiang Mountains, Yunnan, China, at altitudes of 10,000 to 11,000 feet. The flowers are a pale canary yellow. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 5, p. 73.)

48412. *RUBUS MICRANTHUS* D. Don. Rosaceæ.

Bramble.

(*R. lasiocarpus micranthus* Hook.)

"A 848. Forrest No. 15329."

A large rambling plant with colored bark covered with powdery bloom. The prickles are small and compressed, and the leathery leaves, 3 to 10 inches long, are almost plaited by the strong straight veins which are very prominent on the glaucous under surface. The deep-pink flowers are small, and the petals rarely exceed the densely woolly calyx. The fruit, less than half an inch in diameter, is hoary and nearly spherical, with numerous dry or fleshy, red or orange drupes. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 339.)

48413. *RUBUS* sp. Rosaceæ.

Bramble.

"A 847. Forrest No. 15328."

48414. *RUBUS* sp. Rosaceæ.

Bramble.

"A 850. Forrest No. 15447."

48415. *RUBUS* sp. Rosaceæ.

Bramble.

"A 851. Forrest No. 15647."

48304 to 48426—Continued.

48416. RUBUS sp. Rosaceæ. Bramble.

"A 852. Forrest No. 15849."

48417. RUBUS sp. Rosaceæ. Bramble.

"A 853. Forrest No. 15900."

48418. RUBUS sp. Rosaceæ. Bramble.

"A 854. Forrest No. 15902."

48419. RUBUS sp. Rosaceæ. Bramble.

"A 855. Forrest No. 16070."

48420. SILENE MONBEIGII W. W. Smith. Silenaceæ.

"A 721. Forrest No. 14104."

An ornamental perennial from Yunnan, China; the plant is 6 to 20 inches in height, with the branches of the inflorescences terminating in usually 3-flowered cymes of large pink flowers; found growing on open dry stony situations at an altitude of 7,000 feet.

For full technical description, see Notes from the Royal Botanic Garden, Edinburgh, vol. 11, p. 226.

48421. SORBUS VILMORINI C. Schneid. Malaceæ. Mountain ash.

"A 817."

A very interesting shrub from Yunnan, China. Its graceful, finely cut foliage, white or somewhat pinkish flowers, and bright, translucent, rosy red fruits make it an attractive ornamental: (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 682.*)

48422. THERMOPSIS BARBATA Royle. Fabaceæ.

"A 706. Forrest No. 14099."

A densely shaggy perennial herb, about 1 foot in height, with oblanceolate leaflets and stipules just like the leaflets in texture and shape. It bears racemes of 6 to 12 short-stalked flowers with deep-purple corollas 1 inch long. (Adapted from *Hooker, Flora of British India, vol. 2, p. 62.*)

48423. (Undetermined.) Fabaceæ.

"A 704."

48424. (Undetermined.) Fabaceæ.

"A 705. Forrest No. 15923."

48425. (Undetermined.) Fabaceæ.

"A 707. From Tali Range."

48426. (Undetermined.)

"A 846. From the Mekong-Salwin Divide."

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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

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DURING THE PERIOD FROM NOVEMBER 1
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(No. 61; Nos. 48427 to 49123.)



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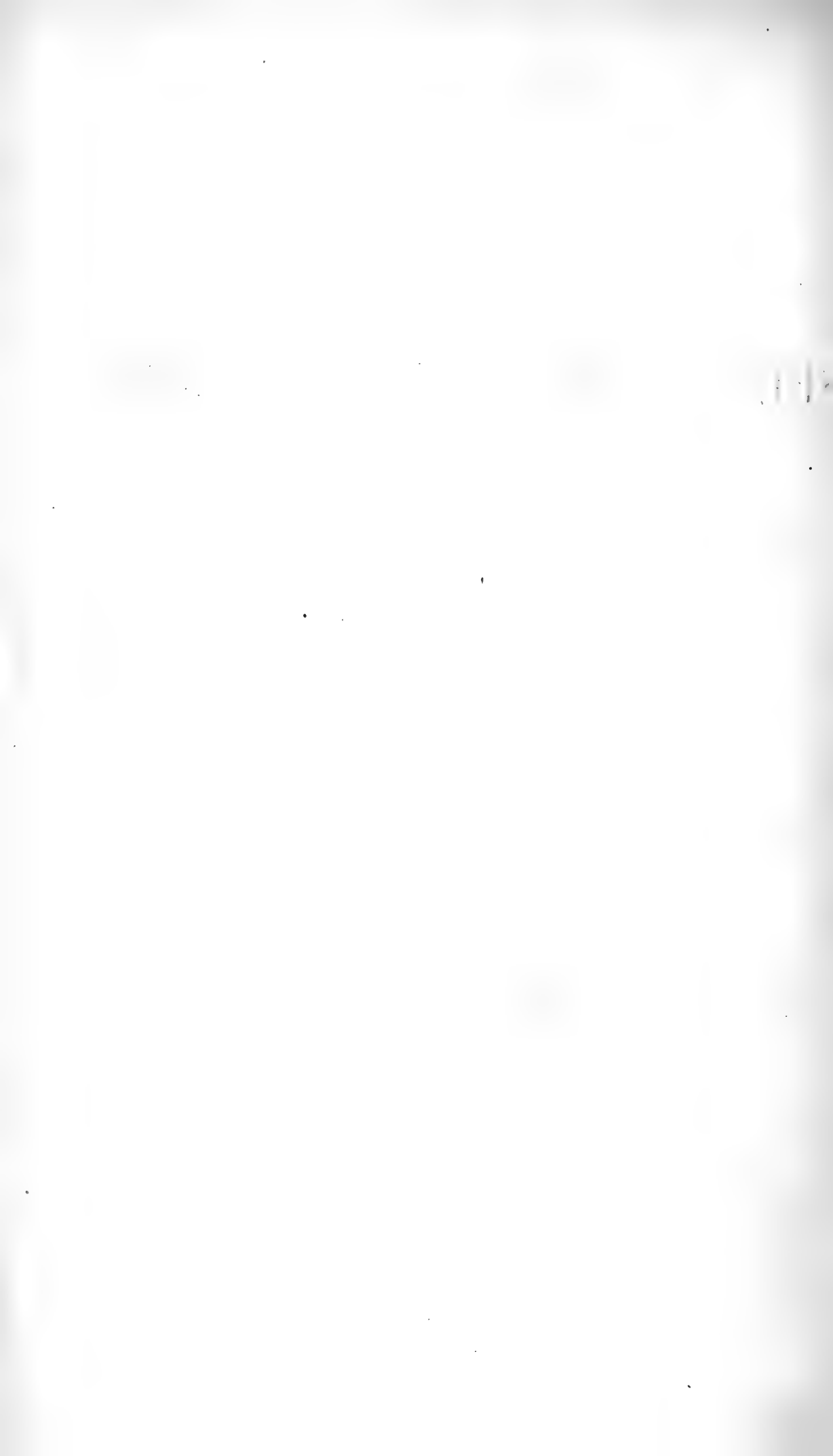
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INTRODUCTORY STATEMENT.

This inventory describes a wealth of new plants. There are more than 25 new fruits included in it, more than 10 striking new timber trees, 4 street or windbreak trees, 8 new forage plants, 5 new cereals, 2 drug plants, 4 new vegetables, and more than 125 new ornamental trees, shrubs, or plants. The expense of propagating these and of finding people who are interested in growing them is one which only those who see the thousands of seedlings coming up can appreciate. The knowledge that the success of a single one of them may in time pay for all the trouble and expense turns the trouble of taking care of them into a romance of real fascination.

The maruka grass (*Echinochloa stagnina*, No. 48427) of the Philippines for trial on overflowed lands on the Everglades of Florida is worth emphasizing.

Mr. J. Burt Davy collected for us, during a short expedition into the region of the Belgian Kongo and Rhodesia, seeds of a remarkable number of interesting economic plants (Nos. 48428 to 48503), among which should be mentioned the knob thorn (*Acacia pallens*, No. 48428, one of the most valuable hardwood trees of the Transvaal; the mootungulu (*Amomum* sp., No. 48433), an edible-fruited plant related to the ginger; the kifumbe (*Bauhinia reticulata*, No. 48437), the pods of which are used for fodder; the mookasje (*Diospyros senegalensis*, No. 48454), a persimmon from the Belgian Kongo; the noxa tree (*Parinari mobola*, No. 48469), a handsome ornamental and useful tree of the Rosaceæ, whose leaves are dark green above and snowy white below and whose edible fruits, the size of a small peach, are produced in such abundance that at the time of ripening a large proportion of the native population is sustained almost exclusively on them; and various cultivated forms of *Uapaca* (Nos. 48490 to 48494), a genus of Euphorbiaceæ, bearing edible fruits which are given native names by the inhabitants of the Kongo.

The yama-momo of Japan or yang mei of China (*Myrica rubra*, No. 48504) is one of the most showy of table fruits, and the fact that specimens of it are growing at Chico, Del Monte, and Berkeley, Calif.,

and Brooksville, Fla., makes it appear desirable to arouse more interest in its culture in America. Its slow growth should not prevent its being planted extensively, for it is a handsome evergreen tree worthy of a place on anyone's lawn.

The Mexican hawthorn (No. 48507), sent by Mr. F. S. Furnivall, with fruits suited for preserves, may add a fruiting and ornamental tree to our Southern States.

When the writer was in Cape Town in 1902, Prof. MacOwan called to his attention the spekboom, an important fodder tree of the karoo, and one of the trees then standing in the gardens was cut down and sent in as cuttings. As a result several trees of this species are now growing in Santa Barbara and San Diego, Calif. If it can be naturalized in this portion of California and become wild, as in South Africa, it will add a valuable forage asset to the hillsides of that region. Dr. Shantz has sent in additional material with most interesting data on this important tree (*Portulacaria afra*, No. 48510).

The late Aaron Aaronsohn called attention to *Crataegus azarolus*, which he had used successfully as a stock for early pears in Palestine. Sr. Pedro Giraud sends in two varieties of it for trial (Nos. 48516 and 48517).

Mr. J. B. Norton, who was sent out as an agricultural explorer to South China, was prevented by ill health from carrying out the program outlined for the work there, but, before he was forced to return, he obtained several interesting things, among which are a new *Actinidia* (No. 48551), related to the yang-tao; the Chinese "olive" (*Canarium album*, No. 48554) which, contrary to general belief, he found has a pleasant, refreshing flavor; a small water-melon with a thin rind (No. 48558), which he suggests might, after improvement, be adapted for serving as an "individual melon;" a lawn and grazing grass (*Eremochloa ophiuroides*, No. 48566) for clay soils possibly as far north as the Carolinas; a new species of legume (*Apios fortunei*, No. 48569), related to our native *Apios tuberosa*, which may be useful in the hybridization and selection of this promising wild legume; a new, attractive pot ornamental (*Trichosanthes cucumeroides*, No. 48585), which the Chinese train on special frames in pots; an ornamental perennial shrubby *Melastoma* (*M. repens*, No. 48718); the "tiger grass" (*Miscanthus sinensis*, No. 48719), from the inflorescence of which excellent brooms are made; and three species of *Rubus* (Nos. 48739 to 48742), promising for hybridization.

Since Bignonias are among the most beautiful of the climbers grown in Florida, a new vine of the same family (*Pandorea ricasoliana*, No. 48624), which so experienced a horticulturist as Dr. Pros-

chowsky says is most strikingly beautiful, producing large bunches of pale-rose blooms, is worthy of emphasis.

With this inventory begins the description of the collections which were made by Dr. H. L. Shantz, agricultural explorer for this office, during the time in which he was attached to the Smithsonian expedition through South and East Africa. As described in the daily papers of the period, Dr. Shantz made, in company with Dr. Raven, of the Smithsonian Institution, a study of the native agriculture of the eastern part of the Belgian Kongo, German East Africa, Portuguese East Africa, and British East Africa, starting at Cape Town and coming out at Cairo. The trip took approximately a whole year and resulted in the collection of invaluable information, photographs, and living material bearing upon the customs of the remarkable agricultural people of these portions of Africa and also in the introduction of hundreds of samples of potentially valuable seeds which should make it possible to discover whether any of the crops grown by these remarkable races have value for the American farmer.

Dr. Shantz finds the m'tsama melon (*Citrullus vulgaris*, No. 48761) of the Kalahari Desert the chief water supply of travelers and dwellers in that region and recommends its further trial in Texas and California. He suggests the use of *Dimorphotheca spectabilis* (No. 48768) for our Great Plains and western desert regions. He found a large-fruited form of *Mimusops* (*M. zeyheri*, No. 48777), which was said to be delicious and would probably grow in southern Texas. He reports *Themeda triandra* (No. 48787) as the most dominant grass of the sweet veldt of Africa. He got a collection of cowpeas (*Vigna sinensis*, Nos. 48791 to 48793) from Cape Province; a new jujube, which is prolific and an attractive ornamental (*Ziziphus* sp., No. 48796); and a beautiful shade tree (*Combretum salicifolium*, No. 48809), which grows along all the watercourses of the arid region around Pretoria and the Orange River region and appears very promising for southern Texas and California.

Regarding the grass called teff (*Eragrostis abyssinica*, No. 48815), the staple hay crop of the high veldt, Dr. Shantz remarks, "It is the most important plant next to corn in the Transvaal. It should grow from Amarillo, Tex., to Judith Basin, Mont." It requires summer rain and therefore is not adapted for cultivation in the Southwest.

Of the kikuyu grass (*Pennisetum clandestinum*, No. 48818) the Union of South Africa Department of Agriculture reports that in wet weather it keeps green all the time, in spite of heavy frosts, and even makes some growth. For soiling dairy cows it is the grass par excellence; it grows almost as rapidly as lucern, yielding four or five cuttings in a season; in food value it is superior to any of our other grasses.

Rhus lancea (No. 48821) Dr. Shantz believes deserves careful study as a shade and timber tree for the southern Texas region, provided it will stand the frosts there.

Since the *Strychnos spinosa* has proved adapted to culture in southern Florida, another species, *S. pungens* (Nos. 48824 and 48825), may do as well. It forms an important element of the food of wild elephants in Mozambique, where the fruits, as large as pummelos, often lie thick on the ground beneath the trees.

Though no commercial variety of corn or sorghum may come directly from them, it is important for the cereal breeder to have for his work the types of these cereals which for centuries, perhaps, have been cultivated by the native African tribes. Under Nos. 48827 to 48832 are described authentic ears of the corn grown by the Basutos, who still control one of the least disturbed sections of South Africa, and under Nos. 48849 to 48859 are described a collection of their sorghums.

Through Mr. F. L. Rockwood, of Bogota, Colombia, comes an introduction of the seeds of the giant Colombian blackberry (*Rubus macrocarpus*, Nos. 48751 and 48752), which was later studied exhaustively by Mr. Wilson Popenoe.

Mr. Edwin Ashby, of Blackwood, South Australia, has contributed a new Australian fruiting bush (*Acrotriche depressa*, No. 48800) suited to regions of light rainfall (15 to 25 inches). It is known as the "native currant." The bushes are not over 2 feet high and bear their fruits in great abundance in masses low down on the main stems. This new fruit seems certainly worthy of the attention of the horticulturists of Texas, Arizona, and southern California.

Through the Forestry Commission of New South Wales a quantity of seeds of the quandong, or "native peach" (*Mida acuminata*, No. 48837), has been obtained. This tree grows in the hotter and drier parts of New South Wales and bears red fruit (from 1½ to 3 inches in circumference), which make excellent conserve and jelly.

Dr. Alvaro da Silveira, of Minas Geraes, Brazil, sends the pusa (*Mouriria pusa*, No. 48838), a new fruit about the size of a wild cherry, which is borne on a small tree 10 feet high and which ought to grow in southern Florida and California.

American children are all familiar with the elderberry, and their faces have more than once been stained by its fruits. Hugo Mulertt, of Wiesbaden, Germany, has discovered a mutation of the European elderberry (*Sambucus nigra*, No. 48839), which has very large berries that instead of being black are greenish golden in color and semi-transparent; they do not stain linen or one's teeth and yet are most excellent when cooked.

Two varieties of Natal grass (*Tricholaena rosea*, Nos. 48843 and 48844) from New Zealand will attract the attention of horticulturists in Florida, where this grass has been such a success.

The Siberian brier (*Rosa laxa*, No. 48845) which, according to Mr. George M. Taylor, of the Florists' Exchange, is an excellent stock for roses on medium and light soils, merits trial by others.

The growing interest in Job's-tears (*Coix lacryma-jobi*) as a cereal and forage crop makes the collection of 16 varieties of this cereal (Nos. 48860 to 48875) which Mr. Thompstone has sent in from Northern Circle, Burma, of unusual importance; and, according to Mr. G. N. Collins, the remarkable collection of varieties of corn (Nos. 48876 to 48921) from the same region, is composed of an entirely new type having waxy endosperms similar to that of a single isolated sort obtained by us from China a number of years ago. For breeding purposes these have very unusual interest.

Through the courtesy of the Director General of Agriculture of the Belgian Kongo, M. Leplae, 51 varieties of cassava (*Manihot esculenta*, Nos. 48924 to 48974) have been received for use in the tests of this plant as a vegetable for home use in southern Florida.

Peppermint growers in Michigan will be pleased to have from the agronomist of the Hokkaido Agricultural Experiment Station authentic material of the best variety of Japanese peppermint (*Mentha piperita*, No. 48980).

Petrea volubilis is one of the loveliest of all climbers recently introduced into southern Florida, and another species of the same genus (*P. arborea*, No. 49031) from Colombia, which is a shrub, will meet with a warm welcome there if it approaches the vine in beauty.

Nos. 49032 to 49050 represent seeds which were collected by Mr. Allanson from the exotic fruiting trees and shrubs in the parks of Rochester, N. Y., and presented to us through the courtesy of Mr. Dunbar, director of the parks; and Nos. 49051 to 49123 represent a similar collection from the Arnold Arboretum, through the courtesy of Prof. Sargent, its director. Most of them represent valuable introductions made by the Arboretum.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels; and the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory, as of all other publications of this office. The manuscript has been prepared by Miss Esther A. Celander and Miss Patty T. Newbold.

DAVID FAIRCHILD,

Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,

Washington, D. C., October 8, 1921.

INVENTORY.¹

48427. *ECHINOCHLOA STAGNINA* (Retz) Beauv. Poaceæ.

(*Panicum stagninum* Retz.)

Maruka grass

From Rizal, Luzon, Philippine Islands. Presented by Mr. Adn. Hernandez, Director of Agriculture, Manila, through Prof. C. V. Piper. Numbered November 12, 1919.

"A tall-growing grass much resembling Japanese millet but with longer awns. The grass is native in the Philippines, Africa, India, and probably most of the Indo-Malayan region. It was originally described by Rumphius from specimens from Batavia, Java. The grass commonly grows in shallow water or on very marshy ground. In the Philippines it covers large areas of nearly pure growth, and at the lower end of Laguna de Bay extensive areas are found on a floating mass of vegetable matter. Quantities of this green grass are sold in the Manila market, where it is known as *balili*. The grass has many vernacular names in India, among which are the following: *dul*, *dula*, *pedda-uda*, *nari*, *shangalli-gaddi*, *pedda-woondoo*; in Sunda, *tjampea*; in Ceylon, *maruka*. The common name used in Ceylon is chosen as a common name for this grass, which therefore may be called '*maruka grass*.' *Panicum burgu* Chev., of the Niger River, is considered identical by some botanists, but others regard it at least sub-specifically distinct. The grass is introduced in the hope that it may be valuable on extensive areas of land in Florida periodically overflowed. In most regions it is reported to be not particularly palatable." (Piper.)

48428 to 48503.

From Johannesburg, Transvaal. Collected by Mr. J. Burt Davy. Received October 29, 1919. Quoted notes by Mr. Davy, except as otherwise stated.

48428. *ACACIA PALLENS* (Benth.) Rolfe. Mimosaceæ. **Knob thorn.**

"(No. 207.) From Bosoli Siding, Southern Rhodesia. One of the more valuable timbers for mine props."

A valuable timber tree, 30 feet in height, with a heavy wood, used for making clubs; the timber is exceedingly hard and is durable under ground. It is considered to be one of the most valuable hardwood trees in the Transvaal and is cut extensively for mine props for the Rand. It is

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by the Office of Foreign Seed and Plant Introduction; and further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases undoubtedly be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

48428 to 48503—Continued.

characterized by the presence of prominent warts on the trunk and main branches, whence it has received the vernacular name of *Knopjesdoorn*. (Adapted from *Kew Bulletin of Miscellaneous Information*, 1907, p. 361.)

48429. *ALBIZZIA KATANGENSIS* Wildem. Mimosaceæ.

"(No. 166.) *Musaasi*. A large deciduous tree with valuable timber, from the wireless station, Elizabethville, Belgian Kongo."

A tree from Katanga, Belgian Kongo, the roots of which are used in an infusion as a disinfectant. (Adapted from Wildeman, *Etudes sur la Flore du Katanga*, 4th ser., p. 37.)

48430. *ALBIZZIA* sp. Mimosaceæ.

"(No. 211.) From Choma, Northern Rhodesia."

48431. *AMERIMNON* sp. Fabaceæ.

(*Dalbergia* sp.)

"(No. 120.) *Moobanga*. From near Elizabethville, Belgian Kongo."

48432. *AMERIMNON* sp. Fabaceæ.

(*Dalbergia* sp.)

"(No. 190.) From Elizabethville, Belgian Kongo."

48433. *AMOMUM* sp. Zinziberaceæ.

"(No. 180.) *Mootungulu*. An herb with bright-red fruits, which are eaten by the natives. These fruits have the fragrance of some of the species of *Kaempferia*. Note the similarity of the name to the Zulu name for *Carissa edulis* (*ama-tungulu*); *moo*, like *ama*, is a prefix. From Elizabethville, Belgian Kongo."

48434. *ANTIDESMA* sp. Euphorbiaceæ.

"(No. 194.) Found on termite nests, in Likasi, Kambove, Belgian Kongo."

Received as *Antidesma venosum*, but it does not agree with our material of *A. venosum*.

48435. *ARACHIS HYPOGAEA* L. Fabaceæ.

Peanut.

"(No. 208.) Peanuts grown by natives at Kapiri M'Poshi, Northern Rhodesia."

48436. *BAIKIAEA PLURIJUGA* Harms. Cæsalpiniaceæ. **Rhodesian teak.**

"(No. 215.) From Victoria Falls, Rhodesia; found growing on a sand veld."

For previous introduction, see S. P. I. No. 48234.

48437 to 48439. *BAUHINIA RETICULATA* DC. Cæsalpiniaceæ.

48437. "(No. 188.) *Kifumbe*. The pods are much relished by cattle. A cattleman in Matabeleland, Southern Rhodesia, grinds them up to mix with concentrates for his pedigreed stock."

A spreading shrub or small tree; from its roots a mahogany-colored pigment is obtained, used by the Manyoro for staining wooden utensils. The stain is most effective; the liquid applied when only slightly diluted, dries rapidly and with a gloss. The shrub grows in quantity also in parts of Toro and Chagwe and is sometimes used in native medicine. (Adapted from Dawe, *Economic Resources of Uganda*, p. 26.)

48438. "(No. 210.) From Elizabethville, Belgian Kongo."

48439. "(No. 205.) From Broken Hill, Northern Rhodesia."

48428 to 48503—Continued.**48440.** BRACHYSTEGIA sp. Cæsalpiniaceæ.

“(No. 132.) *Kaputu*. A common and characteristic tree of the forest. Elizabethville, Belgian Kongo.”

48441. BRACHYSTEGIA sp. Cæsalpiniaceæ.

“(No. 133.) Near to *Kaputu*, but the leaves, pods, and seeds appear to be larger than those of No. 132.”

48442. BRACHYSTEGIA sp. Cæsalpiniaceæ.

“(No. 191.) *Totoole*. The dominant forest tree at Likasi near Kambove, Belgian Kongo. Formerly used by the natives for making bark-cloth garments.”

48443. CANAVALI GLADIATUM (Jacq.) DC. Fabaceæ. **Sword bean.**

“(No. 163.) The red-seeded variety. Grown on fences in Elizabethville gardens.”

“The sword bean, also known as the knife bean and the saber bean, is cultivated through much of southern Asia and also in Africa. The flowers shade from white to red and the seeds are white, gray, or red. The young pods are prepared after the manner of snap beans and are well flavored and wholesome. It is considered one of the best of the native vegetables in India. The very young pods have but little flavor, but when about half grown their taste suggests mushrooms. They are best when about half grown, as the full-sized green pods are rather fibrous. The mature seeds do not seem to be much used as food, though they lack the strong odor of those of the jack bean. The young pods are used by the Japanese for pickling and are very good for this purpose. All varieties of the sword bean that we have tested are rambling vines, none of them being bushy like the jack bean; they are not so desirable for forage as the latter species, since the foliage is just as bitter and the habit inferior. The Indian variety with red seeds and red flowers has proved very satisfactory as a cover crop in Porto Rico. Cattle are said to graze on the plant there to a limited extent. The plant will develop full-grown green pods as far north as Washington, D. C., but ordinarily the season is not long enough for the seeds to ripen.” (*C. V. Piper.*)

For previous introduction, see S. P. I. No. 46773.

48444. CASSIA ABBREVIATA Oliver. Cæsalpiniaceæ.

“(No. 134.) From granitic soils, Matoppo Hills, Matabeleland, Southern Rhodesia.”

A shrub or tree, attaining a height of 12 to 25 feet, with bright ocher-colored flowers; native to Mozambique district. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 2, p. 271.)

48445. CASSIA sp. Cæsalpiniaceæ.

“(No. 193.) A deciduous tree with long pods; found on termite nests at Likasi, near Kambove, Belgian Kongo.”

48446. CASSIA sp. Cæsalpiniaceæ.

“(No. 196.) *Paampi*. Pods used to kill fish. From Likasi, Belgian Kongo.”

48447. COMBRETUM sp. Combretaceæ.

“(No. 104.) An evergreen. From a sand veld at Victoria Falls, Rhodesia.”

48428 to 48503—Continued.**48448. COMBRETUM** sp. Combretaceæ.

"(No. 152.) Near Kimbembe River, Katanga, Belgian Kongo. Large fruits in dense clusters."

48449. COMBRETUM sp. Combretaceæ.

"(No. 154.) *Kifoola-buto*. Near Kimbembe River, Katanga, Belgian Kongo."

48450. COMBRETUM sp. Combretaceæ.

"(No. 164.) Governor's garden, Elizabethville, Belgian Kongo."

48451. COMMIPHORA sp. Balsameaceæ.

"(No. 57.) A spiny, green-barked, deciduous tree. The trunk or branches, cut off and set in the ground during the rainy season, strike root readily and make good living posts for fences or kraal walls. From Bulawayo, Matabeleland, Southern Rhodesia."

48452. DIGITARIA ERIANTHA Steud. Poaceæ.**Grass.**

"(No. 214.) One of our best native sweet-grasses."

Common throughout the eastern half of South Africa, rare in the west. Said to be good fodder for cattle. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 9, pt. 3, p. 429.)

48453. DIOSCOREA sp. Dioscoreaceæ.

"(No. 173.) Bulbils from termite nests at Elizabethville, Belgian Kongo."

48454. DIOSPYROS SENEGALENSIS Perr. Diospyraceæ.**Inkulu.**

"(No. 121.) *Mookasje*. Near Elizabethville, Belgian Kongo."

A shrub or tree, from 6 to 40 feet high, bearing edible fruits up to an inch in diameter. The compact, ebonylike wood is useful in many ways and is much thought of by the natives, who call it *monkey guava* in West Africa and *aje* in Abyssinia. The tree is widely scattered, ranging from Abyssinia and Mozambique on the east to the Gold Coast and Angola on the west. (Adapted from *Hiern, Ebenaceæ*, p. 165.)

A fruiting tree of the inkulu is shown in Plate I.

48455. DIPLORHYNCHUS sp. Apocynaceæ.

"(No. 155.) *Muëngwe*. Near the Kimbembe River, Katanga, Belgian Kongo."

48456. ELEUSINE CORACANA (L.) Gaertn. Poaceæ.**Ragi millet.**

"(No. 143.) A small-seeded millet cultivated by the natives and chiefly used for the manufacture of pombe, a kind of beer."

A substitute for sorghum, called by the Arabians *teleboon*, by the Abyssinians *tocusso*; it is grown only on the poorest soil and where the ground is too wet to admit a better crop. The grain is very small and generally black and is protected by a thick, hard skin; it has a disagreeable taste and makes only a wretched sort of pap. It yields a yeast that is more fit for brewing than for baking; in fact, not only do the Niam-Niam, who are the principal growers of the Eleusine, but also the Abyssinians make a regular beer by means of it. (Adapted from *Schweinfurth, The Heart of Africa*, p. 248.)

For previous introduction, see S. P. I. No. 46295.



AN AFRICAN PERSIMMON TREE, THE INKULU, IN FULL BEARING. (*DIOSPYROS SENEGALENSIS* PERR., S. P. I. No. 48454.)

One of the most interesting plants found by Dr. H. L. Shantz in the Belgian Kongo is the inkulu. Its fruits are somewhat like our persimmons in general character; when green they are quite astringent, but after becoming fully ripe they have a delicious, sweet flavor. The wood, like that of many other species of *Diospyros*, is hard, dark colored, and of considerable value. Dr. Shantz found marked variation in the size, shape, and flavor of fruits on the wild trees. Selection would probably produce varieties of superior merit. The plant is rather drought resistant, but would probably stand very little frost. (Photographed by Dr. H. L. Shantz, Kafue, Northern Rhodesia, November 22, 1919; P36774FS.)



A DENSE THICKET OF SPEKBOOM, IN THE ADDO BUSH, CAPE PROVINCE.
PORTULACARIA AFRA JACQ., S. P. I. No. 48510.)

"One of the most prominent plants of the Addo bush, the habitat of the only herd of wild elephants in South Africa, this plant supplies the larger part of their forage. It is relished also by cattle, sheep, and ostriches, and even children enjoy eating the leaves. It may prove adapted to the coast region of southern California, where it is now growing in gardens, and possibly will take the place of the worthless chaparral." (*Shantz*). Photographed by Dr. H. L. Shantz, Kenkelbosch, Cape Province, September 7, 1919, P.35202FS.)

48428 to 48503—Continued.

48457. ERYTHROPHLOEUM GUINEENSE Don. Cæsalpiniaceæ.

"(No. 126.) *Mo'afi*. A large, handsome tree, with bipinnate leaves; yields good timber.

48458. EUPHORBIA sp. Euphorbiaceæ.

"(No. 170.) From Elizabethville, Belgian Kongo."

48459. (Undetermined.)

"(No. 167.) *Mufungo*. From Elizabethville, Belgian Kongo."

48460. FLACOURTIA sp. Flacourtiaceæ.

"(No. 88.) A thorny, edible-fruited evergreen tree from Cataract Island, Zambezi River, Mozambique. Probably the same as S. P. I. No. 48249."

48461. GOSSYPIUM sp. Malvaceæ.

"(No. 109.) Tree from Zimba, Northern Rhodesia."

48462. GOSSYPIUM sp. Malvaceæ.

"(No. 189.) *Mookollé*. Fruits eaten by the natives. From Elizabethville, Belgian Kongo."

48463. HIBISCUS sp. Malvaceæ.

"(No. 138.) A fiber plant from Tara, Northern Rhodesia."

48464. HOLCUS SORGHUM L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

"(No. 158.) Kafir corn. One of the staple foodstuffs of the South Kongo natives. From Katanga, Belgian Kongo."

"Kafir, the most widely grown variety of the grain sorghums, has considerable sugar in the stem, and all of the varieties are valuable as forage and are used extensively as a source of roughage both in the form of fodder and as silage. The yield of forage from the grain sorghums is usually about two-thirds that of the sweet sorghums, but the smaller yield is partly balanced by the higher feeding value of the seed of grain sorghums, which is an important item in both fodder and silage. Yields of 20 to 40 bushels of grain or 3 to 4 tons of fodder may be expected from the better varieties." (*H. N. Vinall*.)

For previous introduction, see S. P. I. No. 47009.

48465. INTSIA sp. Cæsalpiniaceæ.

(*Afzelia* sp.)

"(No. 149.) *Moopaapi*. From Keemelolo River, Belgian Kongo."

48466. KHAYA SENEGALENSIS (Desr.) Juss. Meliaceæ.

"(No. 125.) *Mawfwi*. A fine tree. Belgian Kongo."

African mahogany. From west tropical Africa. An important timber and cabinet wood of the Tropics. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 564.)

For previous introduction, see S. P. I. No. 8311.

48467. MARKHAMIA PAUCIFOLIOLATA Wildem. Bignoniaceæ.

"(No. 157.) *Tenda-kwair* or *Tantanguale*. From Kimbembe River, Katanga, Belgian Kongo."

For previous introduction, see S. P. I. No. 48216.

48468. MIMUSOPS sp. Sapotaceæ.

"(No. 79.) From Rhodesia."

48428 to 48503—Continued.

48469 to 48471. *PARINARI MOBOLA* Oliver. Rosaceæ.

Nocha or *noxa*. One of the most handsome and useful trees of all the Huilla district, forming extensive forests in the mountainous parts of Morro de Lopollo. It rises to a height of 15 to 40 feet with a maximum diameter of 4 feet; the trunk branches dichotomously and tortuously. The crown is dilated, and the dense, leathery evergreen foliage, deep green above and snowy white beneath, is of extraordinary effect. The wood of the *noxa* is generally employed in Huilla for the manufacture of furniture and other domestic articles and when properly seasoned makes good lumber. But what is most advantageous in this tree is its fruit, since at the time of its ripening, a large proportion of the native population is sustained almost exclusively on *noxas*. So great is the abundance of these fruits in the neighborhood of Lopollo and Humpata that the natives offer large baskets of them to the European colonists at the price of about ten cents for a hundred fruits. The fruits are of the size of a small peach, containing the bulky stone enveloped in a farinaceous-pulpy mass, sweet and of a very agreeable aroma. (Adapted from *Hiern, A Catalogue of Welwitch's African Plants, pt. 1, p. 320.*)

48469. "(No. 110.) *Mobola plum.* From Choma, Northern Rhodesia."

48470. "(No. 114.) From Elizabethville, Belgian Kongo."

48471. "(No. 182.) *Moopundu.* A large tree from Elizabethville, Belgian Kongo; the fruit is eaten by monkeys."

48472. *PHASEOLUS VULGARIS* L. Fabaceæ.

Common bean.

"(No. 184.) Haricot bean grown by natives in the Belgian Kongo, farther north than Elizabethville. It is supposed to be indigenous to the country."

For previous introduction, see S. P. I. No. 47873.

48473. *PLECTRONIA* sp. Rubiaceæ.

"(No. 168.) From termite nests near Elizabethville, Belgian Kongo."

48474. *PSEUDOLACHNOSTYLIS* sp. Euphorbiaceæ.

"(No. 139.) *Moosalië.* Fruit eaten by small antelopes."

"(No. 206.) From Broken Hill, Northern Rhodesia."

48475. *PTEROCARPUS DEKINDTIANUS* Harms. Fabaceæ.

"(No. 115.) *Moolembo.* A rare and valuable timber tree from Elizabethville, Belgian Kongo; yields a kino. [A kino is a dark red or blackish tanniferous product similar to catechu, obtained from various tropical trees. It is commonly used in medicine as an astringent, but less often than catechu in tanning and dyeing.] "

A tree, 16 to 33 feet in height, with pinnate leaves and numerous-flowered racemes. The roundish membranaceous legume is broadly winged. (Adapted from *Engler, Botanische Jahrbücher, vol. 30, p. 89.*)

48476. *RICINUS COMMUNIS* L. Euphorbiaceæ.

Castor-bean.

"(No. 200.) Growing wild by a railroad track at Baya, Katanga Province, Belgian Kongo."

48477. *SECURIDACA LONGIPEDUNCULATA* Fres. Polygalaceæ.

"(No. 172.) From Elizabethville, Belgian Kongo."

A much-branched divaricate shrub, sometimes attaining a height of 10 feet, native to Upper Guinea, Abyssinia, and Mozambique district.

48428 to 48503—Continued.

The coriaceous leaves are revolute-margined when dry, and the flowers are rose, or shades of purple or violet, or variegated with white, in terminal spreading racemes. (Adapted from *Oliver, Flora of Tropical Africa, vol. 1, p. 134.*)

For previous introduction, see S. P. I. No. 47994.

48478. SECURIDACA LONGIPEDUNCULATA PARVIFOLIA Oliver. Polygalaceæ.

“(No. 123.) *Mooyaye*. The bast fiber is used for string. The ash of the root is said to be poisonous.”

This plant has leaves considerably smaller than those of *S. longipedunculata* and its bark affords a valuable flaxlike fiber, the buaze fiber of Zambeziland. Native to Upper Guinea and Lower Guinea. (Adapted from *Oliver, Flora of Tropical Africa, vol. 1, p. 134.*)

48479. SPOROBOLUS INDICUS (L.) R. Br. Poaceæ.

Grass.

“(No. 209.) A useful grass, adventive at Burttholm, Vereeniging, Transvaal.”

For previous introduction see S. P. I. No. 47803.

48480. STRYCHNOS UNGUACHA A. Rich. Loganiaceæ.

“(No. 130.) *Zanza*. A deciduous tree found growing near the river. The pulp surrounding the seeds is eaten by the natives.”

An erect Abyssinian tree with somewhat leathery leaves and dense cymes of small white flowers. The globose fruit, 2 to 2½ inches in diameter, contains 15 to 20 seeds which are three-fourths of an inch long. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 4, sec. 1, p. 534.*)

48481. STRYCHNOS sp. Loganiaceæ.

“(No. 201.) Collected in the woods near Baya, Katanga.”

48482. TERMINALIA SERICEA Burchell. Combretaceæ.

“(No. 137.) From Devon, Matabeleland, near Bulawayo. Known as *mangwe*; considered one of the best timbers of Matabeleland. It is also called *yellowwood* (not the Cape yellowwood, which is *Podocarpus*).”

For previous introduction, see S. P. I. No. 48258.

48483. TERMINALIA sp. Combretaceæ.

“(No. 151.) From granitic formation, Bulawayo, Matabeleland, Southern Rhodesia.”

48484. TERMINALIA sp. Combretaceæ.

“(No. 174.) From Elizabethville, Belgian Kongo.”

48485. TERMINALIA sp. Combretaceæ.

“(No. 195.) *Mukolwa*. From Likasi, near Kambove, Belgian Kongo.”

48486. TETRAPLEURA sp. Mimosaceæ.

“(No. 204.) A tall leguminous tree from Broken Hill, Northern Rhodesia.”

48487. THEMEDA QUADRIVALVIS (L.) Kuntze. Poaceæ.

Grass.

“(No. 213.) *Rooi-gras*. The dominant grass of the high veld, on ‘sweet-veld’ areas. From Burttholm, Vereeniging, Transvaal. This is one of our best native grasses.”

48428 to 48503—Continued.

An annual erect grass, native to India and used there for fodder. Introduced elsewhere. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa*, vol. 9, pt. 3, p. 420.)

For previous introduction, see S. P. I. No. 41919.

48488. *TOUNATEA MADAGASCARIENSIS* (Desv.) Kuntze. Cæsalpiniaceæ.
(*Swartzia madagascariensis* Desv.)

“(No. 147.) *N'daale*. The pod smells sweet inside, as though containing sugar; it is said to be edible for stock. Lubumbashi River, Belgian Kongo.”

An African tree, 15 to 20 feet high, with spreading, horizontal, or even drooping branchlets. The bark is whitish, and the leaves coriaceous. The space between the outer and inner layers of the coriaceous legume is filled by spongy transverse partitions inclosing resinous gummy matter. (Adapted from *Hiern, Catalogue of Welwitsch's African Plants*, pt. 1, p. 286, and *Oliver, Flora of Tropical Africa*, vol. 2, p. 257.)

48489. *TRICHOLAENA ROSEA* Nees. Poaceæ. Natal grass.

“(No. 127.) Useful hay grass.”

A perennial South African grass which does not survive the winter where the temperature falls much below freezing, so that it is usually cultivated as an annual. The seeds are produced in large clusters about the size and shape of a panicle of oats. In most cases the seed clusters are bright red or rosy crimson in color, and for that reason the grass has sometimes been called “redtop.” It is, however, very different from the common northern grass known as redtop. The plants are killed by a single plowing, and by keeping the land cultivated in other crops through the whole of a single season all the seeds in the ground will have germinated and the young plants will be killed by cultivation, so Natal grass can not become a troublesome weed. Good Natal grass hay is an excellent feed. The stems and leaves are not tough, are very palatable, and are eaten without waste. The stems are so slender that the hay makes an attractive-looking bale and so sells well on the market. The commercial use of the hay has been developed in the past few years, and wherever offered it usually brings the same price as timothy. It is easily cured, is rich in protein, and the average yield is 2½ to 3 tons per acre or about three-fourths of a ton for each cutting. When planted on favorable soil, Natal grass makes such vigorous growth as to choke out most other grasses and weeds. (Adapted from *S. M. Tracy and C. V. Piper*.)

For previous introduction, see S. P. I. No. 41921.

48490 to 48492. *UAPACA NITIDA* Muell. Arg. Euphorbiaceæ.

48490. “(No. 141.) *Musokolobwe*. Fruit edible. From Belgian Kongo.”

A shrub or tree, up to 50 feet high, with an erect trunk and spreading head. The entire rigid, shining leaves are crowded toward the ends of the branches. Native to Lower Guinea, Rhodesia, and German East Africa. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa*, vol. 6, pt. 1, p. 639.)

48491. “(No. 160.) *Musokolobwe* (*makooba*). Fruit edible. From Elizabethville, Belgian Kongo.”

48428 to 48503—Continued.

48492. "(No. 161.) *Musokolobwe* (*kilobo*). This appears to be a third form passing under the vernacular name."

48493. *UAPACA* sp. Euphorbiaceæ.

"(Nos. 122 and 159.) *Moosooku* (*kiloko*). Found in the Belgian Kongo near Elizabethville.

48494. *UAPACA* sp. Euphorbiaceæ.

"(No. 111.) A tree growing near a river at Elizabethville, Belgian Kongo (No. 213); *mahobohobo* from Choma, Northern Rhodesia; and (No. 156) edible fruit of *makombwi* from the Kimbembe River, Katanga, Belgian Kongo."

48495. *VITEX CAMPORUM* Buettn. Verbenaceæ.

"(No. 144.) *Mufutu*. On termite nests at Elizabethville, Belgian Kongo."

A tree, native to Upper Guinea and Lower Guinea, with densely pubescent branchlets and long-stalked, 3-foliolate, somewhat leathery leaves. The hairy campanulate flowers are in dense, axillary cymes. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 5, p. 323.*)

48496. *VITEX* sp. Verbenaceæ.

"(No. 175.) *Mufutu*. There is more than one species passing under this name. From Elizabethville, Belgian Kongo."

48497. *ZEA MAYS* L. Poaceæ.

Corn.

"(No. 186.) Native maize of the Belgian Kongo."

48498. *ZIZIPHUS* sp. Rhamnaceæ.

"(No. 124.) *Loonkawle*. Growing along rivers and on termite nests in the Belgian Kongo. The fruit is edible but not worth eating. The wood is useful and durable."

48499. *ZIZIPHUS* sp. Rhamnaceæ.

"(No. 197.) From Lufisa River, Katanga, Belgian Kongo."

48500. (Undetermined.)

"(No. 106.) From a sand veld, Victoria Falls, Rhodesia."

48501. (Undetermined.)

"(No. 108.) Tree at Zimba, Northern Rhodesia."

48502. (Undetermined.)

"(No. 140.) *Kibobo*. Edible fruit. From Elizabethville, Belgian Kongo."

48503. (Undetermined.)

"(No. 153.) *Mukawba*. A small edible-fruited tree from Kimbembe River, Katanga, Belgian Kongo."

48504. MYRICA RUBRA Sieb. and Zucc. Myricaceæ.

From Yokohama, Japan. Purchased from the Yokohama Nursery Co.
Received November 1, 1919.

Yama-momo. This very pretty evergreen tree is closely allied to the sweet gale (*Myrica gale*), well known in America. It is a small tree, attaining a height of some 15 to 20 feet, with oblong or lanceolate, dark-green, smooth, and glistening leaves, 3 to 4 inches long. This tree, or large bush, grows especially in the mountains of southern Japan. Its name, *yama-momo*, indicates its habitation, as it means literally "mountain peach." How far north it grows

wild I am not prepared to say. One Japanese authority asserts that it grows all over Japan, a statement I am unable to verify. A specimen in the botanical garden at Tokyo is about 12 feet high, with a very dense, spreading, round head and short trunk. It is very ornamental. The fruit when fully ripe is pleasantly acidulated and juicy. It is apparently made up of a large number of densely crowded sections, quite distinct from each other, but radiating from a small central stone or hard seed. On this specimen the fruit was red, but there are varieties with fruits of different colors. A white-fruited kind, having comparatively large fruit, is said to be of very excellent quality. The tree is commonly propagated by seed, but the Japanese assert that it can also be grafted on the mulberry. It is planted by them partly for fruit and partly for ornament, but not largely for either purpose. The bark is an important dye-stuff. (Adapted from *The American Garden*, vol. 12, p. 82.)

48505 and 48506.

From Transvaal, South Africa. Presented by Mr. George Thorncroft, Winter Bros., Barberton. Received November 7, 1919.

48505. *ALOE PRETORIENSIS* Pole Evans. Liliaceæ.

Aloe pretoriensis is found commonly on many of the kopjes around Pretoria. It grows plentifully on the northern slopes of Mentjes Kop, and extends from here in an easterly and westerly direction on the range of hills composed of the Daasport quartzite; it is also found in the Spekboom Valley near Lydenburg, at Barberton, and along the foot of the Lebombo Range of mountains.

The most distinctive feature of the plant is its tall branched inflorescence, the racemes of which are densely clustered with brightly colored flowers; so conspicuous are they that they form a bright-scarlet patch of color in the landscape and are visible from a considerable distance. The flowers contain a quantity of honey and consequently attract large numbers of brilliant sunbirds. The dense rosettes of tapering leaves, usually withered at the tips, have frequently a very characteristic red hue about them and spring from a stoutish stem 4 to 5 inches in diameter. The stem is dark brown to black in color, extremely rough, and clothed throughout its entire length by the remains of withered leafstalks. At first sight this *Aloe* certainly resembles *A. lineata* in general habit, but on closer examination it is found that the leaves are more narrowly linear-lanceolate than those of *Aloe lineata*. (Adapted from *The Gardeners' Chronicle*, vol. 56, 3d ser., p. 105.)

48506. *CYRTANTHUS THORNCROFTII* C. H. Wright. Amaryllidaceæ.

An African bulbous plant with two long narrow leaves and bearing a short 2-flowered scape. The small light-red flowers are nearly an inch across. (Adapted from *Kew Bulletin of Miscellaneous Information*, p. 421, 1909.)

48507. *CRATAEGUS MEXICANA* Moc. and Sesse. Malaceæ.

From Guadalajara, Mexico. Presented by Mr. F. S. Furnivall, through Mr. Andrew J. McConnico, American consul. Received November 8, 1919.

"White thorn, commonly known as the 'manzanilla' or 'tejecote,' is indigenous to the mountain sections of Mexico and Guatemala; the fruit (a little apple about the size of the American crab apple) is insipid in the raw state but very valuable for making jelly; the tree or shrub may be used with marked success as a stock in budding and grafting apples and pears." (*Furnivall*.)

For previous introduction, see S. P. I. No. 46481.

48508. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

From Santa Cruz, Calif. Presented by Mr. George G. Streater. Received November 19, 1919.

"*Indian Blood* peach. A vigorous-growing tree, bearing freestone peaches. The flesh is dark blood red, very juicy, and of very good quality; the skin is greenish gray suffused with red. It is late maturing and looks as though it would make an excellent canning peach." (*Peter Bisset.*)

48509. VOUACAPOUA INERMIS (Swartz) Knuth. Fabaceæ.
(*Andira inermis* H. B. K.)

From Georgetown, Demerara, British Guiana. Presented by Mr. R. Ward, superintendent, Botanic Garden. Received November 25, 1919.

A slow-growing leguminous tree, called in Jamaica *cabbage tree* or *cabbage-bark tree*, on account of its disagreeable odor. It is generally distributed in Porto Rico and is sometimes used in coffee plantations for shade. The fleshy pods, about the size of a horse-chestnut, contain but a single seed. The floors of the caves of Aguas Buenas, Porto Rico, are in places covered with the seeds of this species, which are carried in by bats for the sake of the inclosing pulp. These seeds germinate in the caves, sending up slender white sprouts 2 or 3 feet high. The wood, which is said to be hard and durable, varies in the same tree from reddish yellow to black and takes a high polish. It is used for wheel hubs, for flooring and all sorts of carpenter work, and was formerly used in Brazil in the construction of boats. In Porto Rico its most common use is for the framework of houses. It is imported into Europe and used for turned parts of cabinetwork, and to make canes and parasol handles. (Adapted from *Cook and Collins, Mexican, Central American, and Porto Rican Plants*, p. 80.)

48510. PORTULACARIA AFRA Jacq. Portulacaceæ. **Spekboom.**

From Johannesburg, Transvaal. Cuttings collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received November 26, 1919.

"(No. 122. Pretoria, Transvaal. October 8, 1919.) Plant from the Botanic Grounds." (*Shantz.*)

A succulent South African shrub, rising to 12 feet, which affords locally the principal food for elephants; it is excellent for sheep pasture; hence, it may deserve naturalization on stony ridges and in sandy desert land not otherwise readily utilized. It is stated that all kinds of pasture animals eat it readily and, when grass is scarce, live on it almost entirely. It grows on hot rocky slopes and prefers doleritic soil. It is easily grown from cuttings and even from single leaves. *Spekboom* displays an extraordinary recuperative power when broken by browsing animals or when injured from other causes. The trunk may attain 1 foot in diameter. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 420.)

In some places the spekboom is arborescent, up to 20 feet high, often forming dense thickets. The juicy leaves are a wholesome food for all classes of stock as well as for wild animals, including buffaloes and elephants; hence, farms with plenty of spekboom need not fear an ordinary drought. "Providence meant to spoil our farmers in placing the spekboom on the hills of the karoo," wrote MacOwan in one of his articles on the fodder plants of the country. (Adapted from *Marloth, The Flora of South Africa*, vol. 1, p. 209.)

"The yearly rainfall of the region in which the spekboom thrives averages about 18½ inches, and the rainiest months are the hottest ones (November, December, and January), the temperature reaching 108° F. During these months the rainfall is about 2 inches. In the winter months the rainfall is between 0.35 and 0.54 of an inch and the temperature sometimes as low as 21° F. The plant has been successfully introduced into America and small trees of it are now growing in San Diego and Santa Barbara, Calif." (*David Fairchild.*)

For previous introduction, see S. P. I. Nos. 9604 and 12020.

The spekboom is illustrated in Plate II.

48511 to 48515. *RIBES LOBBII* A. Gray. Grossulariaceæ.

Gooseberry.

From near Castlerock, Wash. Collected by Dr. David Fairchild. Received September 30, 1919, and October 6, 1919.

"Seeds of the largest wild gooseberries that I have ever seen. The fruits from which these seeds were taken I collected from a vigorous bush growing beside the road on a detour between Castlerock and Kelso, Wash., September 10, 1919. This particular bush appeared to bear unusually large fruits for a wild plant, some of them attaining a diameter of an inch. The fruits were attached to the bush by a very slender pedicel, and when I touched them they dropped into my hands. They were covered with flat-topped glandular hairs which made them slightly sticky to the touch and they had an odor reminding me of that exhaled by the leaves of *Rosa xanthina*. A farmer whom we met on the road declared that he could tell when he was near bushes of this species of gooseberry by the odor. The entire skin is claret red when the fruit is ripe, but as these were near the roadside they were grimy with dust which had stuck to their sticky glandular surfaces. The skin peels off easily, exposing a whitish tissue inside of which is the characteristic gooseberry flesh containing a few small seeds. The flavor is extremely mild, not sour but sweetish and rather lacking in character; capable of being improved possibly through breeding by the addition of that tartness so characteristic of our eastern wild gooseberry. I obtained as many seeds as possible with the idea that the seedlings from this particular specimen might inherit the unusual size and that it might be of value in breeding experiments." (*David Fairchild.*)

48511. No. 1. Wild gooseberry.

48512. No. 2. Wild gooseberry.

48513. No. 3. Wild gooseberry.

48514. No. 4. Seeds from the largest berry.

48515. Mixed seed of wild gooseberry.

48516 and 48517. *CRATAEGUS AZAROLUS* L. Malaceæ.

From Granada, Spain. Purchased from Mr. Pedro Giraud. Received November 29, 1919.

Among the species of *Crataegus* one of the most important is *C. azarolus* with its numerous varieties and races. This is a shrub of the calcareous hills and grows only on very dry lands. If undisturbed it grows as high as 13 to 16 feet, but its branches are generally hacked off for fuel by Arab women or mutilated by heavy stones thrown by the boys to shake down the fruit. Some varieties of *C. azarolus* have fruits as large as a large cherry, with a very agreeable acid taste. Although they are sold on the markets of the Orient, they would not be marketable in Europe or America because of the large stones;

but specimens are often found which are nearly stoneless, and it is possible that this character could be fixed by selection.

For fifteen years or more the writer has used *C. azarolus* as a stock for pears with excellent results. Top-grafted at 2 to 3 feet above the ground, it develops into a very beautiful, productive, and long-lived dwarf tree, provided the grafting is done with a very early variety. This shrub grows in extremely hot, dry places and must therefore complete the greater part of its development early in the season. Its roots, therefore, are unable to furnish the sap necessary to develop pears in August. If, however, it is grafted with a pear which fruits in May or June, when the roots of the *Crataegus* are in their period of greatest activity, the best results are obtained.

The writer speaks only of pears, because he has experimented with them, but he sees no reason a priori why these stocks should not do as well for apples, which he has not as yet tried. (Adapted from Aaronsohn, *Bureau of Plant Industry Bulletin No. 180*, p. 15.)

48516. "A red-fruited form." (*Giraud.*)

48517. "A yellow-fruited form." (*Giraud.*)

For previous introduction, see S. P. I. No. 33205.

48518 to 48550.

From Kenkelbosch, Cape Province. Collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received November 1, 1919. Quoted notes by Dr. Shantz.

48518. *ACACIA HORRIDA* (L.) Willd. Mimosaceæ.

White thorn.

"(No. 75. Kenkelbosch, Cape Province. September 8, 1919.) A South African shrub, 4 to 10 feet high; it is very white when leafless because of the large spines. It grows mostly in the open, and seeds abundantly."

A natural hedge of this species is shown in Plate III.

48519. *ARCTOTIS ACAULIS* L. Asteraceæ.

"(No. 25. Kirstenbosch, Cape Province. August 25, 1919.) A beautiful composite, from 6 to 12 inches high, ranging from deep red to orange."

48520. *ASPARAGUS* sp. Convallariaceæ.

"(No. 79. Kenkelbosch, Cape Province. September 10, 1919.) A large spiny type from South Africa, with very pretty foliage; one of the *Wachten-beetje* [wait-a-bit thorns]; a very decorative vine with a red berry and black seed."

48521. *LEUCOSPERMUM*. Proteaceæ.

"(No. 76. Kenkelbosch, Cape Province. September 3, 1919.) A beautiful low bush from South Africa, with a very showy flower."

48522. *MEDICAGO HISPIDA DENTICULATA* (Willd.) Urban. Fabaceæ.

Bur clover.

"(No. 70. Port Elizabeth, Cape Province. September 2, 1919.) A low-growing clover, with heads of purple flowers. It is found on most lawns, producing a very dense cover. It is said to die out during hot weather but is excellent when the season is not too dry."

48523 to 48545. *PHASEOLUS* spp. Fabaceæ.

Bean.

"(Nos. 44 to 69. Rosebank, Cape Town. August 27, 1919.) Beans from the Entomological Station at Rosebank, which have been grown for weevil resistance. All strains being grown for experimental purposes have been separated from the commercial varieties."

48518 to 48550—Continued.

48523. *PHASEOLUS AUREUS* Roxb.

Mung bean.

"(No. 44.) This is a small green bean of good flavor; when cracked in a coffee mill it makes good bean porridge. The seed resembles a small pea."

48524 to 48533. *PHASEOLUS COCCINEUS* L.

Scarlet Runner bean.

48524. "(No. 49.) Grown for weevil resistance by Mr. C. W. Mally, Cape entomologist."

48525. "(No. 60.) This number is splashed with light and dark brown markings."

48526. "(No. 61.) Reddish black markings on purplish ground."

48527. "(No. 62.) Large bean; black markings on purple ground."

48528. "(No. 63.) Similar to No. 62 [S. P. I. No. 48527], but smaller."

48529. "(No. 64.) See No. 60 [S. P. I. No. 48525]. Black splotches on purple ground."

48530. "(No. 65.) Dark variety of No. 64 [S. P. I. No. 48529]."

48531. "(No. 66.) Purple variety with black dots."

48532. "(No. 67.) A black variety."

48533. "(No. 68.) A white variety."

48534 and 48535. *PHASEOLUS LUNATUS* L.

Lima bean.

48534. "(No. 45.) *Governor* bean. A white bean with two small dark spots."

48535. "(No. 46.) Similar to No. 45 [S. P. I. No. 48534], but with a complete, dark-brown ring around the hilum."

48536 to 48545. *PHASEOLUS VULGARIS* L.

Common bean.

48536. "(No. 48.) A black bean a little larger than the navy bean."

48537. "(No. 50.) A tan-colored bean with a white eye surrounded by a brown ring. Said to be a popular bean in the back country."

48538. "(No. 53.) A dark bean, purplish to black."

48539. "(No. 54.) A purple variety of No. 53 [S. P. I. No. 48538]."

48540. "(No. 55.) A black variety of No. 53 [S. P. I. No. 48538]; bean still smaller than No. 54 [S. P. I. No. 48539]."

48541. "(No. 56.) A dark tan-colored bean, darker than No. 50 [S. P. I. No. 48537] and apparently an entirely distinct strain."

48542. "(No. 57.) A small white bean, like a navy bean."

48543. "(No. 58.) A black and white or black-eyed bean."

48544. "(No. 59.) A red and white bean with peculiar markings, similar, in general appearance, to No. 6 sent in from St. Vincent [S. P. I. No. 47979]."

48545. "(No. 69.) Similar to No. 50 [S. P. I. No. 48537], but lighter in color and larger."



A NATURAL HEDGE OF THE KAROO THORN IN SOUTH AFRICA. (*ACACIA HORRIDA* (L.) WILLD., S. P. I. No. 48518.)

Because of its shining white spines, the karoo thorn is fully as attractive when leafless as it is when clothed with its grayish green, finely divided foliage. When set closely together, the plants form an impenetrable hedge. They also serve in Africa as forage for sheep and cattle. Since the native home of the species is the desert region of Cape Province, it should be well adapted for culture in our Southwestern States. (Photographed by Dr. H. L. Shantz, Kenkelbosch, Cape Province, September 8, 1919; P36211FS.)



**A NEW ORNAMENTAL FOR THE DRY SOUTHWEST. (*BURKEA AFRICANA* HOOK.,
S. P. I. No. 48804.)**

Although it belongs to the Leguminosae, this African tree is known as the Rhodesian ash. It bears yellow flowers and is a striking thing when in full bloom. Its seeds are said to be used as food in times of famine. The wood is tough and coarse grained. Since it comes from a dry, sandy region with rather cool winters, it should succeed in California and our South-western States. (Photographed by Dr. H. L. Shantz, Wonderboom, near Pretoria, Transvaal, October 12, 1919: P36434FS.)

48518 to 48550—Continued.**48546. PROTEA LEPIDOCARPODENDRON L. Proteaceæ.**

"(No. 71. Port Elizabeth, Cape Province. September 2, 1919.) A large Protea bearing very large flowers; the handsome petallike bracts have black tips. It should be grown in California and possibly through the South. This is an important plant in the vegetation of hilly land."

For previous introduction, see S. P. I. No. 48184.

48547. SCHOTIA SPECIOSA Jacq. Cæsalpiniaceæ.

"(No. 77. Kenkelbosch, Cape Province. September 10, 1919.) *Boerboom*. A spiny tree, 6 to 20 feet high, used in tanning; produces scarlet flowers, followed by large pods, which are eaten when green by elephants and Boers. The tree is not grown in cultivation, but is an important element of the bush; the wood is hard."

48548 and 48549. SOJA MAX (L.) Piper. Fabaceæ. Soy bean.
(*Glycine hispida* Maxim.)

48548. "(No. 51. Rosebank, Cape Town. August 27, 1919.) A small yellowish bean grown for weevil resistance."

48549. "(No. 52. Rosebank, Cape Town. August 27, 1919.) A yellowish bean similar to No. 51 [S. P. I. No. 48548]."

48550. SOLANUM AURICULATUM Ait. Solanaceæ.

"(No. 37. Mowbray, Cape Town. August 27, 1919.) A Solanum with small fruits and very large hairy mulleinlike leaves."

48551 to 48586.

From China and Japan. Collected by Mr. J. B. Norton, Agricultural Explorer of the Bureau of Plant Industry. Received November 29, 1919. Quoted notes by Mr. Norton.

48551. ACTINIDIA sp. Dilleniaceæ.

"(Seeds from Kuliang Hills, near Foochow, Fukien. September 8, 1919.) Collected by Mr. C. R. Kellogg from vines found by me. This vine is a wonderful grower after it gets started, and when clipped back sends out shoots 20 feet or more long before laterals are formed. The young woolly shoots are strikingly attractive. The fruit is not inedible if the woolly skin is removed. This species, like many other species not used by the natives at present, is found around deserted villages."

48552. ARISAEMA sp. Araceæ.

"(Kuliang Hills, near Foochow. August 6, 1919.) This is perhaps identical with the Japanese aroid used as a source of aeroplane varnish. The showy orange-red fruit stayed fresh from the time of collection until unpacked at the Plant Inspection Office, Washington, D. C., late in November."

48553. BENINCASA HISPIDA (Thunb.) Cogn. Cucurbitaceæ. Wax gourd.

"Collected near Foochow. This large gourd is common in summer and fall in the markets of Foochow. I did not test its edibility, but understand that it is very good."

48554. CANARIUM ALBUM (Lour.) DC. Balsameaceæ.

"(Foochow, China. September 14, 1919.) The fruit has a pleasant refreshing flavor to which it is easier to become accustomed than that of pickled olives. The Chinese are very fond of it and pay high prices

48551 to 48586—Continued.

for the fruits in the markets of Foochow and elsewhere. The fruit keeps well and when no longer fresh is dried or pickled. The tree grows well and reaches a height of 50 feet, with a broad spreading top. It is apparently very easy to graft, for it is top-worked by the Chinese in a very crude manner and apparently always successfully. The tree is also useful as a street or ornamental tree."

48555 and 48556. *CASTANEA CRENATA* Sieb. and Zucc. Fagaceæ.

Japanese chestnut.

48555. "(Kobe, Japan. October 28, 1919.) Samples of chestnuts being loaded for shipment to America."

48556. "(Foochow, China. September 15, 1919.) Samples from market."

48557. *CELOSIA ARGENTEA* L. Amaranthaceæ.

Cockscomb.

"(From Foochow, China. September 14, 1919.) Collected on waste land on Nantai Island near Foochow. This plant is common along the margins of gardens and fields and among the cemeteries on the hills. The silvery white spikes are very attractive."

48558. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon.

"(Foochow, China. September 15, 1919.) Seeds of the common, small, red-fleshed melon of this region, which has very thin rinds and fine quality flesh but is lacking in sugar. It should be used in disease-resistant breeding to get shipping and marketing qualities for small melons. It has a very attractive appearance and the size suggests the possibility of producing a watermelon small enough to ship in crates for individual consumption."

48559. *CORCHORUS CAPSULARIS* L. Tiliaceæ.

Jute.

"(Foochow, China. September 14, 1919.) The common fiber plant of this region. The better farmers grow small patches of these plants for their own use."

48560 to 48562. *CUCURBITA PEPO* L. Cucurbitaceæ.

Gourd.

48560. "(Foochow, China. September 15, 1919.) An ornamental squashlike cucurbit used for room decoration by the Chinese."

48561. "(Foochow, China. September 17, 1919.) An ornamental squashlike cucurbit used for room decoration by the Chinese. The skin of this gourd is orange blotched with green."

48562. "(Gourds from Nagasaki, Japan. October 20, 1919.) An ornamental gourd used for room decoration by the Japanese. Bought in the market."

48563. *DIOSCOREA ALATA* L. Dioscoreaceæ.

Yam.

"Bulbils from a vine in the garden of a Chinese missionary teacher in Foochow, China. September 10, 1919."

48564. *DRYMOGLOSSUM* sp. Polypodiaceæ.

Fern.

"(From Nagasaki, Japan. A plant growing on volcanic cliffs near Mogi. October 14, 1919.) A very small creeping fleshy fronded fern for rockwork. This fern is found in the shaded ravines of Japan and China growing over the face of the rocks. It stands considerable drying out and makes a solid cover, suggesting some fleshy leaved flowering plant. It would be very good for use on rockwork in gardens in Florida and California."

48551 to 48586—Continued.

48565. ELEOCHARIS TUBEROSA (Roxb.) Schult. Cyperaceæ. Beechi.

"(Foochow, China. September 17, 1919.) Tubers of the beechi, or water chestnut, as it is sometimes called, from the market in Foochow. This plant is one of the very common food plants of this region. One sees the peeled and unpeeled tubers in all parts of Foochow. Apparently they are eaten by all classes. Venders sell them strung on split bamboo sticks, six tubers peeled and sometimes dipped in a dark-brown candy paste. The fields of this water chestnut were common both on the river level and on high ground. The grasshoppers eat the tops very badly, so that I saw no good seed."

48566. EREMOCLOA OPHIUROIDES (Muero) Hack. Poaceæ. Grass.

"(Kuliang Hills, near Foochow, China. August 25, 1919.) Tops of the best lawn and grazing grass of this region. All through the clay region and the gravelly sand alluvial this is the dominant plant. All the neglected fields and washed hillsides are overgrown with it. It is depended upon in Kuliang and largely in Foochow as a source of cover for lawns. If the lawns are mowed, clipped, or grazed, this is the only grass which persists except Bermuda grass (*Capriola dactylon*), which sometimes maintains itself along the edges of walks and paths. This grass in pure culture does not need to be mowed, as it grows only 3 or 4 inches high. In rich soil it is dark green. It can be eradicated easily, as the runners are on the surface, and it is easily propagated by pieces of runners, turf, or seed. It is the best grazing grass in this region, growing with *Lespedeza striata* and allied forms over the fallow terrace lands. The prime condition of the cattle grazing in the hills here depends upon the prevalence of this grass and lespedeza. This is also an excellent plant to prevent washing; the long runners stretch out in every direction, root at every node, and soon branch and make cover. If it can be grown even as far north as North Carolina, it will solve the lawn difficulties of the Eastern States, where none of our grasses are satisfactory the year round."

48567. FICUS sp. Moraceæ.

"(Kuliang Hills, near Foochow, China. September 3, 1919.) Seed of the common banyan which finds its natural northern limit at Foochow. This tree is the best general-purpose shade tree commonly found at Foochow."

48568. GINKGO BILOBA L. Ginkgoaceæ. Ginkgo.

"(Shanghai, China. October 1, 1919.) Many tons of 'nuts' may be seen in the markets of Shanghai in September. Numerous grades are seen, based apparently on individual trees. The samples collected illustrate the range of variation."

48569. APIOS FORTUNEI Maxim. Fabaceæ.

"(Kuliang Hills, near Foochow, China. September 2, 1919.) This relative of *Apios tuberosa* and *A. priceana* is very important as a possible means of producing hybrids. It differs from both our American species, but may cross with one or both. It has a large fleshy root suggesting *A. priceana* in type. If, through it, the type of either one of our native plants can be broken up and a range of variation started to use in selection work, a new crop will be assured."

For previous introduction, see S. P. I. No. 44569.

48551 to 48586—Continued.

48570. *IPOMOEA REPTANS* (L.) Poir. Convolvulaceæ.
(*I. aquatica* Forsk.)

"(Foochow, China. September 10, 1919.) This plant is an important leaf vegetable or potherb. Several varieties are grown, but the common wide-leaved aquatic form grown in paddy and pond-edge culture is more abundant in markets. A dry-land form is found even on the hilltop up to 3,000 feet. Its growth is not nearly as tender as the aquatic form, but some say the two forms are different only in the cultural methods. In the flats on Nantai Island forms were found with narrow leaves. While they were cultivated in a half-hearted way, it seemed that these strains were little improved from the wild type, which, however, I did not see in this region, so that the plant is evidently not a native of Foochow. Some of the aquatic dry-land forms showed no bloom up to September, but the hill dry-land forms were in bloom in July and well seeded late in August. The quality of this plant is only mediocre, as the flavor has nothing distinctive about it. The upland forms are more or less fibrous, but the water-grown shoots of the flat plains are quite brittle. On early mornings in June and July one sees great loads of the shoots about 18 inches long in the market streets. The hollow stems, over half an inch in diameter, and the succulent leaves are cut up and cooked into a spinachlike table vegetable. The Chinese say that they carry the aquatic form through the winter without seed, renewing the field from cuttings in the spring. Both forms are attacked by white rust very badly. These seeds were obtained from a patch grown in very wet soil, but not under paddy conditions."

48571. *JUGLANS REGIA* L. Juglandaceæ.

Walnut.

"(Kobe, Japan. October 28, 1919.) Thin-shelled Persian walnuts from China procured here, where they were being transshipped. The shipment was apparently from ungrafted seedlings, but all the nuts were much thinner shelled than those from Japan and were as good as high-grade stock from California."

48572 and 48573. *KOCHIA SCOPARIA* (L.) Schrad. Chenopodiaceæ.

48572. "(Saigo, near Nagasaki, Japan. October 10, 1919.) A plant used for brooms all along the eastern coast of China and in Japan. The stems are very tough and durable. It is an ornamental border plant. This is not the same as the common Kochia of American seed catalogues. These plants are not highly colored in the fall and are fastigiate inverted pyramidal rather than ovoid. The branches and twigs are wonderfully tough and wear resistant. Every little garden has a few of these plants, first for ornamentals, then to pull for brooms to sweep the walks and yard."

48573. "(Foochow, China. September 14, 1919.) Another sample of the plant used for brooms by the Chinese and Japanese."

48574. *OSTERDAMIA JAPONICA* (Steud.) Hitchc. Poaceæ.
(*Zoysia japonica* Steud.)

Grass.

"(Mogi, near Nagasaki, Japan.) Mixed seed of two forms of the common lawn grass of Japan. These seem distinct from the forms grown at Miami and Pasadena. If they are free-fruited strains they will prove an important addition to our grass importations, as *Osterdamia* when properly handled is one of the best lawn grasses for the South."

48551 to 48586—Continued.**48575.** *PSIDIUM GUAJAYA* L. Myrtaceæ.**Guava.**

"Seeds from a very large guava in the market of Foochow, China. Large yellow or green guavas were very common. When stewed with red plums they make a very pleasant fruit dish."

48576. *PYRUS* sp. Malaceæ.**Pear.**

"(Kuliang Hills, near Foochow, China. August 30, 1919.) Seeds of a wild pear tree growing in a village on Kuliang. This seems to be the semiwild form of the cultivated pear of this region."

48577. *PYRUS* sp. Malaceæ.**Pear.**

"(Foochow, China. September 16, 1919.) Seeds of an ovoid sand pear common on Foochow markets."

48578. *PYRUS* sp. Malaceæ.**Pear.**

"(Foochow, China. September 16, 1919.) Seeds of a large round sand pear common in the markets at Foochow."

48579. *PYRUS* sp. Malaceæ.**Pear.**

"(Foochow, China. September 16, 1919.) Seeds of a small round sand pear common in the markets at Foochow."

48580. *PYRUS* sp. Malaceæ.**Pear.**

"(Foochow, China. September 10, 1919.) Seeds collected in market by Chinese 'boy.'"

48581. *PYRUS* sp. Malaceæ.**Pear.**

"(Foochow, China. September 10, 1919.) Seeds collected in market by Chinese 'boy.'"

48582. *PYRUS* sp. Malaceæ.**Pear.**

"(Foochow, China. September 10, 1919.) Seeds collected in market by Chinese 'boy.'"

48583. *RHODOMYRTUS TOMENTOSA* (Ait.) Wight. Myrtaceæ.

"Growing among the azaleas on the Kuliang Hills, China, is this shrub with beautiful silvery-green leaves. Its flowers come in June and last until mid-July. While not so showy as an azalea it helps to make the bare grass-covered hills pleasant to the eye."

48584. *ROSA* sp. Rosaceæ.**Rose.**

"(Foochow, China. September 14, 1919.) Seeds of the common summer-blooming rose of Foochow fields. Very robust and hardy. This rose was in bloom in June on the hills and uncultivated areas on the island. It is a large white rose of strong growth and dark-green foliage. The bractlike involucre below the ovary is a striking characteristic. Found wherever the clay of granite origin is not covered by river alluvial silt. This rose thrives from sea level up to the top of Kushan (3,000 feet). Some plants were still flowering late in August, but most of the bushes or vines were set full of large red hips, often three-fourths of an inch or more in diameter. If the old flowers were picked off I think it would continue to bloom. All the other roses here are out of bloom before July. This rose varies from a small shrubby plant of pastures, scarcely 2 feet in spread, to bushes 6 feet high and with stems an inch through. In front of a bungalow at Kuliang was one that spread on the ground with runners 10 feet long. Now and then flowers are seen with more than five petals. This rose is used by the missionaries for table decoration."

48551 to 48586—Continued.**48585. TRICHOSANTHES CUCUMEROIDES (Ser.) Maxim. Cucurbitaceæ.**

"(Foochow, China. Seeds from the garden of Mrs. T. N. Wilkinson. September 14, 1919.) This beautiful vine is grown in pots and trained on a frame about 2 feet high, the vine being wound in and out in a globe-shaped arrangement by the Chinese gardeners. In autumn, when the bright-red fruits hang among the dark-green lower leaves and the lacinate starlike flowers peep out among the upper leaves, this plant is very attractive. As a trellis vine it does not show so well, as it is not compact enough. The fruits are about 4 inches long and 1 inch through, shaped like an elongated lemon. When ripe they are a brilliant red."

48586. TRICHOSANTHES sp. Cucurbitaceæ.

"(Kuliang Hills, near Foochow, China. August 6, 1919.) A wild gourd found on the hills northwest of Kuliang, growing in grassland; about 3 inches in diameter, round, and yellow, and very full of seed; pulp bitter but attractive looking. Should be grown as a possible trellis ornamental."

48587 and 48588. SOJA MAX (L.) Piper. Fabaceæ. Soy bean.
 (*Glycine hispida* Maxim.)

From Mirpurkhas, Sind, India. Presented by Mr. T. F. Main, Deputy Director of Agriculture. Received October 21, 1919.

"Two varieties of soy beans typical of the region around Sind. They have been under trial for the last five years on the Mirpurkhas Farm and give yields varying from 120 to 180 pounds per acre." (*Main.*)

48587. "Black soy beans."

48588. "White soy beans."

48589. ALEURITES MONTANA (Lour.) Wilson. Euphorbiaceæ.
Mu-oil tree.

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received October 30, 1919.

"This tree is very scarce in Mauritius. It was introduced many years ago at the Royal Botanic Gardens of Pamplemousses, under the erroneous name of *Acer heterophylla*. The tree has been grown only for the pretty flowers and foliage. The blossoming generally precedes the coming out of leaves, but in 1911 the two appeared together." (*Regnard.*)

Aleurites montana yields an oil from the seeds practically identical with that from *A. fordii*, the tung-oil tree of China. While the seeds of the two species are almost indistinguishable, the fruits are easily recognized by their exteriors; those of the former are prominently ridged, while those of the latter are smooth.

48590 to 48594. TRITICUM AESTIVUM L. Poaceæ.
 (*T. vulgare* Vill.)

Common wheat.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received November 3, 1919. Quoted notes by Dr. Trabut.

"These wheats are cultivated in an oasis by irrigation."

48590. No description was received with this material.

48591. "Wheat cultivated in Salla, Sahara."

48592. "*Ali Ben Makhloul* from Tuat, Sahara."

48593. "*Kernouf* from Tuat, Sahara."

48594. "Wheat from Gourara, Sahara."

48595. CASSIA TOMENTOSA L. f. Cæsalpiniaceæ.

From Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received November 5, 1919.

A tall shrub, tomentose or pubescent throughout, with oblong leaflets and terminal and axillary racemes of large deep-yellow flowers. (Adapted from Grisebach, *Flora of the British West Indian Islands*, p. 207.)

48596. ACHRAS ZAPOTA L. Sapotaceæ.**Sapodilla.**

From Panama, Republic of Panama. Presented by Mr. Ramon Arlas-Feraud. Received November 5, 1919.

"The *sapodilla* or *chicozapote* is the best of the sapotaceous fruits. It is common in many parts of tropical America (growing wild in several regions) and is cultivated successfully in southern Florida, where it merits commercial exploitation. The fruits, which are picked when still hard, can be shipped to distant markets. Choice varieties should be propagated by budding." (*Wilson Popenoe.*)

48597 to 48608.

From Para, Brazil. Presented by Mr. André Goeldi. Received November 5, 1919. Quoted notes by Mr. Goeldi, except as otherwise stated.

48597. BRADBURYA PLUMIERI (Turp.) Kuntze. Fabaceæ.
(*Centrosema plumieri* Turp.)

A luxuriant ornamental vine known throughout the Parahyba Valley and also between Sao Paulo and Rio Janeiro, Brazil. It thrives in the dense shade, the vines climbing up to the tops of the trees at least 20 feet, until they find the sun. It bears large numbers of smooth pods about 8 inches long.

For previous introduction, see S. P. I. No. 32058.

48598 and 48599. BRADBURYA VIRGINIANA (L.) Kuntze. Fabaceæ.
(*Centrosema virginianum* Benth.)

48598. "Collected in September, 1919."

48599. "From Marajo Island."

48600. CANAVALI OBTUSIFOLIUM (Lam.) DC. Fabaceæ.

A creeping bushy herb, native to all the tropical regions, coriaceous-fleshy throughout even to the flowers, which are bright purple. The linear-oblong pods bear five to eight very hard, red-brown seeds, which are used as small change in Loanda, Angola. (Adapted from *Hiern, A Catalogue of Welwitsch's African Plants*, pt. 1, p. 254.)

For previous introduction, see S. P. I. No. 44753.

48601 and 48602. CASSIA sp. Cæsalpiniaceæ.

48601. "A fiber plant."

48602. "From Marajo Island."

48603. PHASEOLUS sp. Fabaceæ.

"Marajo Island. September, 1919."

48604. CLITORIA GLYCINOIDES DC. Fabaceæ.

"Collected in September, 1919."

48605. PAVONIA sp. Malvaceæ.

"A fiber plant."

48597 to 48608—Continued.**48606.** TRIUMFETTA sp. Tiliaceæ.

"A fiber plant."

48607. VIGNA VEXILLATA (L.) Rich. Fabaceæ.

"Collected in September, 1919."

48608. WISSADULA SPICATA (H. B. K.) Presl. Malvaceæ.An inferior forage, useful for cattle in times of emergency. (Adapted from *Correa, Flora do Brazil*, p. 137.)**48609 to 48611.**

From Salisbury, Rhodesia. Roots presented by Mr. H. C. Mundy, agriculturist and botanist, Department of Agriculture. Received November 7, 1919.

"We have sent you two tins containing roots of cow cane, Indian cane, and m'fufu grass. As these plants are very hardy, I trust that the roots will retain their vitality. We have never obtained seeds of either cow cane or Indian cane, as the plants have not flowered with us." (*Mundy.*)

48609. PENNISETUM sp. Poaceæ.**M'fufu grass.****48610.** SACCHARUM sp. Poaceæ.**Indian cane.****48611.** SACCHARUM sp. Poaceæ.**Cow cane.****48612.** CACARA EROSA (L.) Kuntze. Fabaceæ.**Yam bean.**(*Pachyrhizus angulatus* Rich.)

From Santiago de las Vegas, Cuba. Presented by Dr. Mario Calvino, director, Estacion Experimental Agronomica. Received November 8, 1919.

"Seeds of what we consider to be *Pachyrhizus tuberosus*. This plant bears blue flowers, although I have seen in Mexico one variety with white flowers." (*Calvino.*)

For previous introduction, see S. P. I. No. 47146.

48613. CASSIA AUSTRALIS Sims. Cæsalpiniaceæ.

From Cairo, Egypt. Presented by Mr. F. S. Walsingham, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received November 11, 1919.

An erect Australian shrub, simple or very little branched toward the top. The abruptly pinnate leaves are made up of 10 or 12 pairs of oblong-elliptical leaflets, and the axillary peduncles usually bear four large golden-yellow flowers. (Adapted from *Curtis's Botanical Magazine*, pl. 2676.)

48614 to 48623. MANIHOT ESCULENTA Crantz. Euphorbiaceæ.(*M. utilissima* Pohl.)**Cassava.**

From St. Kitts, British West Indies. Cuttings presented by Mr. F. R. Shepherd, agricultural superintendent, Botanic Station, St. Kitts-Nevis. Received November 11, 1919.

"I am sending three sticks of each of the different varieties of cassavas." (*Shepherd.*)

48614. *Bitter No. 1.***48619.** *Jackroe.***48615.** *Bitter No. 4.***48620.** *Small leaf.***48616.** *Blackolick.***48621.** *Sweet No. 1.***48617.** *Blue top.***48622.** *Red Greenaway.***48618.** *French No. 3.***48623.** *White Greenaway.*

48624. PANDOREA RICASOLIANA (Tanf.) Baill. Bignoniaceæ.*(Podranea ricasoliana Sprague.)*

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received November 10, 1919.

"Seeds of a most strikingly beautiful climber. It is evergreen, quick-growing, and produces its flowers during six or eight months—from spring to autumn, here—and perhaps would produce all through the year in a warmer climate. The flowers are large and of a beautiful pale-rose color; they are produced in large bunches, hundreds sometimes being open at the same time. I have had this species for more than 20 years, but this year is the first time it ever produced any seeds, four fruits having developed." (*Proschowsky.*)

For previous introduction, see S. P. I. No. 32969.

48625. TRIFOLIUM REPENS L. Fabaceæ.**White clover.**

From Groningen, Holland. Presented by Mr. C. Broekema, director, Groninger Zaaizaadvereening. Received November 11, 1919.

"*Friesland* white clover seed of the 1918 crop. It is unnecessary to state that the *Friesland* white clover is not a pure-bred strain, but what we call a 'land-race.'" (*Broekema.*)

48626. FERONIA LIMONIA (L.) Swingle. Rutaceæ. Wood-apple.*(F. elephantum Correa.)*

From Peradeniya, Ceylon. Presented by Mr. H. F. Macmillan, superintendent, Botanic Gardens, Department of Agriculture. Received November 15, 1919.

"*Wood-apple*, or *elephant-apple*. A good-sized tree, 40 to 50 feet high, native to India and Ceylon. It bears round fruit, about the size of a large cricket ball, similar to the bel fruit, but distinguished from it by having a whitish, warty surface. The hard, woody shell incloses a soft, brownish, mealy substance which has a strong aromatic odor. The fruit is generally relished in Ceylon by the poorer classes and is also used in native medicine. Elephants, too, are fond of it. The tree is common throughout the dry region, being often cultivated there as well as in the moist low country." (*Macmillan.*)

48627 to 48630. BRASSICA spp. Brassicaceæ.

From Sibpur, near Calcutta, India. Presented by Mr. A. Gage, director, Botanical Survey of India. Received November 17, 1919. Quoted notes by Mr. Gage.

48627 and 48628. BRASSICA CAMPESTRIS SARSON Prain. Sarson.

48627. "Dark seeds mixed with *tori* from the Calcutta market."

48628. "Yellow seeds from the Calcutta market."

48629. BRASSICA JUNCEA (L.) Cass. Chinese mustard.

"*Lutni Rai*. Yellowish brown seeds from the Calcutta market."

48630. BRASSICA NAPUS DICHOTOMA (Roxb.) Prain. Tori,

"*Tori* from the Calcutta market."

48631 and 48632. BETA spp. Chenopodiaceæ.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received November 19, 1919. Quoted notes by Dr. Trabut.

48631 and 48632—Continued.**48631. BETA VULGARIS MACROCARPA (Guss.) Moq.**

"Very abundant on salty, clayey soil."

48632. BETA VULGARIS PERENNIS L."*Spinach-beet*. The leaves are used like spinach."**48633. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. African oil palm.**

From Kamerun, West Africa. From Mr. Fred Hope, Ebolwoa. Received November 19, 1919.

Variety *poissonii*. The distinguishing character of this form is the presence around the fruit of a "collar" which consists of the persistent perianth having become more accrescent and more fleshy than usual. Very little notice appears to have been taken previously of the perianth at the time when the fruit was mature, probably owing to its having been removed before the fruit was brought into the market. The fruit is obovoid or subglobose, about 3 cm. long (not including the beak, which is 1 cm. long), and somewhat constricted at the base, not ventricose as in some varieties. The woody endocarp is about 5 mm. thick. The 6-parted perianth is thick and fleshy and almost incloses the fruit. Its segments have a transverse thickening about 5 mm. from their apices. According to an analysis made at the Imperial Institute it contains "69.9 per cent of oil, equivalent to 14.8 per cent calculated on the whole fruit or 78.2 per cent calculated on the dry pulpy covering." The ordinary pulp adhering to the nuts of this form yields 27.2 per cent of oil. (Adapted from *Kew Bulletin of Miscellaneous Information*, p. 93.)

48634 to 48636. LOTUS spp. Fabaceæ.

From Weraroa, New Zealand. Presented by Mr. E. Bruce Levy, biologist, Central Development Farm. Received November 24 and 25, 1919. Quoted notes by Mr. Levy.

48634. LOTUS CORNICULATUS L.

"Bird's-foot trefoil."

An excellent fodder, considered a valuable ingredient in meadows and pastures. Native to Tasmania, Victoria, New South Wales, and South Australia. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 134.)

For previous introduction, see S. P. I. No. 18371.

48635. LOTUS ULIGINOSUS Schkuhr.

"Greater bird's-foot trefoil."

A pasture plant of agricultural importance, fairly largely used in New Zealand, from 10 to 15 tons of seed being sown annually. This plant prefers a wet or swampy habitat. The seed sold in December, 1918, at about a dollar per pound. It is saved for seed mainly in the Auckland Province, but prior to the war the greater portion was imported, mainly from Germany. This seed was exported from the latter country under the name of *Lotus villosus* or *L. uliginosus*, which names are the European trade names for the *L. major* of the New Zealand seed trade. *Lotus major* is very variable with regard to certain characters, such as hairiness, and in consequence several botanical names have been given to the plant. There are apparently a good many different strains, but whether these breed true from seed and are good agricultural species or whether

48634 to 48636—Continued.

they are due either to the habitat in which they are growing or to fertilization has not yet been ascertained. (Adapted from *The New Zealand Journal of Agriculture*, vol. 17, p. 347.)

For previous introduction, see S. P. I. No. 5942.

Received as *L. major*, which is now considered to be a synonym of *L. uliginosus*.

48636. *Lotus* sp.

"Hairy bird's-foot trefoil."

Received as *L. hispidus*, but the sample does not agree with our material of that species.

48637 to 48654.

From Persia. Presented by Mr. Edward C. M. Richards, forester, New York City. Received November 25, 1919. Quoted notes by Mr. Richards.

"Perhaps you will recall that late in May, 1917, when I was starting for western Persia to do relief work, you asked me to do what I could toward securing Persian seeds of various kinds for you. I returned to New York this last July bringing with me a variety of vegetable and grain seeds. These seeds were collected for me by various Persians, and I trust that you will find them of use to you."

48637. *CAPSICUM ANNUUM* L. Solanaceæ.

Red pepper.

"Hot red pepper."

48638. *CUCUMIS MELO* L. Cucurbitaceæ.

Muskmelon.

48639. *FICUS CARICA* L. Moraceæ.

Fig.

"Kurdistan fig."

48640 and 48641. *HORDEUM DISTICHON PALMELLA* Harlan. Poaceæ.

Barley.

48640. "Yellow barley."

48641. "Ordinary form."

48642. *JUGLANS REGIA* L. Juglandaceæ.

Walnut.

48643 and 48644. *ORYZA SATIVA* L. Poaceæ.

Rice.

48643. "*Ardibil*."

48644. "*Sadry*."

48645. *RAPHANUS SATIVUS* L. Brassicaceæ.

Radish.

48646 to 48651. *TRITICUM AESTIVUM* L. Poaceæ.

Common wheat.

48646. "*Hamisee bahar*. One of the best wheats of Persia. Can be used as either fall or spring wheat."

48647. "Fall wheat."

48650. "No. 2."

48648. "*Perfumé*, spring wheat."

48651. "No. 3."

48649. "No. 1."

48652 and 48653. *VITIS VINIFERA* L. Vitaceæ.

Grape.

48652. "*Zenjon*."

48653. "*Black Kurdistan*."

48654. *ZEA MAYS* L. Poaceæ.

Corn.

48655. *RODGERSIA PINNATA* Franch. Saxifragaceæ.

From Ness, Neston, England. Seeds presented by Mr. A. K. Bulley. Received November 28, 1919.

"One of the finest of wild plants, which is apparently beginning to break under garden culture. Seedlings are varying greatly in color. There are some very fine reds. The seed generally germinates easily and the plant, espe-

cially in the deep red forms, is certainly one of the very finest of herbaceous perennials." (*Bulley.*)

48656. *RANDIA* sp. Rubiaceæ.

From Concepcion, Paraguay. Presented by Mr. R. Gwynn. Received November 29, 1919.

"A very ornamental bush, 12 to 15 feet high, growing on the bank of a stream about 7 miles from Rio Paraguay in the Chaco region. It is very handsome." (*Gwynn.*)

48657 to 48688.

From Montevideo, Uruguay. Presented by Sr. Luis Guillot, Direccion General de Paseos Publicos. Received October 17, 1919.

48657. *ARISTOLOCHIA FIMBRIATA* Cham. Aristolochiaceæ. (*A. ciliata* Hook.)

Fringed-flowered Aristolochia. A native of Buenos Aires, with a weak, slender stem, not climbing; the leaves are cordate-reniform and very obtuse. The tube of the perianth is green, much curved, like a hunting horn, swollen at the base, expanding above into a large 1-sided limb which is greenish brown outside and deep purple-brown inside, with yellow reticulations; the margin is beset with long, succulent hairs, each tipped with a gland. The very singular structure and color of the long-fringed flowers render this species particularly worthy of cultivation under glass or in favorable situations in the open. (Adapted from *Curtis's Botanical Magazine*, pl. 3756.)

48658. *BACCHARIS CORDIFOLIA* DC. Asteraceæ.

Mio-mio. This shrubby, much-branched plant is well known by farmers and herders to be a violent poison to herbivorous animals. Doubtless the danger is great enough for it to be recognized as poisonous by the animals, as thickets of the *mio-mio* in the pastures remain undisturbed. (Adapted from *Arechavaleta, Flora Uruguaya*, vol. 3, p. 234.)

48659. *BACCHARIS GENISTELLOIDES* (Lam.) Pers. Asteraceæ.

Carqueja. This erect, somewhat shrubby plant is found in grassy fields everywhere in Uruguay, Colombia, Ecuador, Peru, Argentina, and Paraguay. In Brazil it is used medicinally. (Adapted from *Arechavaleta, Flora Uruguaya*, vol. 3, p. 224.)

48660. *BLEPHAROCALYX LANCEOLATUS* Berg. Myrtaceæ.

Multa. A very abundant, tall, slender tree with fragrant leaves; the small yellow fruits are not edible. The wood of this tree is soft and nearly white. (Adapted from *Venturi and Lillo, Contribucion al Conocimiento de los Arboles de la Argentina*, p. 67.)

48661. *CARICA QUERCIFOLIA* (St. Hil.) Benth. and Hook. Papayaceæ.

"The fruit from this species is said to contain more papain than that of any other. The tree is very hardy, is uninjured by light frosts, and should prove of value for breeding purposes." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 41298.

48662. *CELTIS AUSTRALIS* L. Ulmaceæ.

Nettle tree.

The nettle tree is one of the best trees for replanting forests because of its rapid growth, even in poor and rocky soils. The value of its products (wood, leaves, and fruits) soon compensates for the expense incurred in planting and cultivating it.

48657 to 48688—Continued.

In the temperate zone, to which it is best suited, the nettle tree does well in any exposure and in any soil. Its different ways of propagation allow the grower to choose the method of planting which is best adapted to the local conditions and to the soil. The tree does well in soils where other trees grow only with difficulty and helps to cover rocky and arid ground. When grown on the pollarding system or in groups of coppice shoots, it supplies material for the manufacture of many agricultural implements. Each part of the tree is of value and supplies useful material; thus, the wood, by reason of its hardness, fine grain, delicate color, elasticity, and resistance, is excellent for turning or cabinetmaking; the leaves are valuable as fodder for animals, especially in seasons and districts in which there is a shortage of green fodder; cattle and goats willingly eat the young leaves which, when fresh, contain 6.30 per cent of nitrogenous substances, 0.15 per cent of fat, and 19.69 per cent of carbohydrates. Nearly every year the nettle tree gives an abundant crop of stone fruit very rich in sugar (39.40 per cent when completely ripe), which makes a very useful feedstuff for live stock, especially in districts where it is not possible to include sugar in the rations. The kernel contains 67.10 per cent of fat, that is to say, 7.02 per cent of that of the whole fruit. When ground the stones yield about 10 per cent of fat, but, if the kernels are separated from the woody part, this may amount to 60 per cent. In this case cakes containing about 12 per cent of protein, 12.4 per cent of fat, and 48.5 per cent of nitrogen-free extract are obtained. The oil extracted may be used for various purposes.

The nettle tree should be preferred to all other trees for replanting woods, and offers means of rapidly covering bare ground with plant growth. The speedy and large remuneration promised by its products may serve as an attraction to private landowners who wish to help in the regeneration of Italian forests. (Adapted from *Annali della Regia Scuola Superiore di Agricoltura in Portici*, 2d ser., vol. 13, p. 1.)

48663. CELTIS TALA Gillies. Ulmaceæ.

Tala. On the coast of the Atlantic and in the district of Tuyu immense thickets of *tala* exist. It is a tree with a short, stout, branched trunk. The wood is yellowish white and smooth; it is used for posts and firewood. (Adapted from *Venturi and Lillo, Contribucion al Conocimiento de los Arboles de la Argentina*, p. 102.)

For previous introduction, see S. P. I. No. 42285.

48664. CISSUS SICYOIDES L. Vitaceæ.

(*Vitis sicyoides* Miquel.)

The leaves of this vine are cooked with taros and castor oil and used as a poultice for abscesses. (Adapted from *Sack, Plantaardige Voortbrengselen van Suriname*, p. 42.)

48665. CISTUS CANDIDISSIMUS Dun. Cistaceæ.

A beautiful rapid-growing evergreen shrub, with silvery-white leaves and short-lived, pale rose-colored flowers, from the Canary Islands. It is an ideal rockery plant. (Adapted from *Flora and Sylva*, vol. 2, p. 44.)

48666. CISTUS LADANIFERUS L. Cistaceæ.

The gum cistus is the finest of the genus and one of the best and hardiest of small shrubs. It is a handsome, bushy evergreen, from 4 to

48657 to 48688—Continued.

8 feet in height, with scented foliage. The stem and the large, deep-green leaves, silvery white below, are clammy pubescent. The numerous, large, showy white flowers have a bold crimson blotch at the base of each petal. In parts of the East the gum is gathered from this plant by beating the branches with a sort of flail, the thick gummy juice being scraped off and made into a fragrant resin. (Adapted from *Flora and Sylva*, vol. 2, p. 44, and *Gardening Illustrated*, vol. 22, p. 212.)

48667. *DODONAEA VISCOSA* (L.) Jacq. Sapindaceæ.

Chirca de monte. A tree, 3 to 5 meters high, with erect branches and dark wrinkled bark. The leaves are of varying shapes, oblong to lanceolate; the greenish white flowers are very small; and the fruit is a deep red capsule. It is frequent in stony places along the coast and is also found in the interior. (Adapted from *Arecharaleta, Flora Uruguay*, vol. 1, p. 290.)

For previous introduction, see S. P. I. No. 45726.

48668. *DOLICHOS JACQUINII* DC. Fabaceæ.

(*D. lignosus* Jacq. not L.)

A perennial twining plant, pilose throughout; with ovate-acute scabrous leaves about 2 inches long; the umbels of white flowers are followed by straight, terete legumes, 3 to 4 inches long, covered with yellow hairs and snow-white inside. The small, reniform, shining black seeds, 8 to 10 to a pod, have a white hilum. Native to Caribbean forests. (Adapted from *Jacquin, Selectarum Stirpium Americanarum Historia*, p. 205.)

For previous introduction, see S. P. I. No. 27534.

For discussions of the status of *Dolichos lignosus* and of *D. jacquini*, the following publications should be consulted: Piper, C. V., and Morse, W. J., "The Bonavist, Lablab, or Hyacinth Bean," U. S. Department of Agriculture Bulletin No. 318, 1915; Freeman, G. F., "The Purple Hyacinth Bean," *Botanical Gazette*, vol. 66, pp. 512 ff. 1918.

48669. *DURANTA LORENTZII* Griseb. Verbenaceæ.

"A shrub, 3 or 4 meters high, with lilac flowers and drupaceous succulent fruits." (*Guillot*.)

48670. *EUGENIA AUSTRALIS* Wendl. Myrtaceæ.

(*E. myrtifolia* Sims.)

A handsome evergreen shrub from East Australia, with graceful, slightly winged branches and smooth, shining, elliptic leaves. The dainty white flowers have persistent calyxes with spreading red sepals, small petals, and very many, extremely long, large-anthered stamens. The leaves and flowers have a pleasant aromatic taste. The palatable fruit is utilized particularly for jam, but the seed must be removed from the pulp. (Adapted from *Curtis's Botanical Magazine*, pl. 2230, and *Mueller, Select Extra-Tropical Plants*, p. 212.)

48671. *EUGENIA GUABIJU* Berg. Myrtaceæ.

Pitanga. This slender ornamental tree is found on the banks of streams. The immature fruit is red, turning black when mature; it is smaller than that of *Ñangapirñ* (*Eugenia uniflora*), and is not edible. (Adapted from *Venturi and Lillo, Contribucion al Conocimiento de los Arboles de la Argentina*, p. 69.)

For previous introduction, see S. P. I. No. 3208.

48657 to 48688—Continued.

48672. *FICUS SUBTRIPLINERVIA* Mart. Moraceæ.

A Brazilian forest tree with a dense crown of obtuse papery leaves, prominently 3-veined at the base. The small axillary fruits are globular. (Adapted from *Martius, Flora Brasiliensis, vol. 4, pt. 1, p. 99.*)

48673. *GLEDITSIA AMORPHOIDES* (Griseb.) Taub. Cæsalpiniaceæ.

A spiny Bolivian tree, flowering in December; it sometimes attains a height of 50 feet and the trunk diameter is often 2½ feet. Hieronymus states, according to Taubert, that the bark is used in place of soap for removing spots from woolen and cotton goods; hence the name "quillay." The leaves, young twigs, and roots have astringent properties. The wood is used in making vessels for holding liquids, in turning, house furniture, and for wooden soles and pegs. (Adapted from *Taubert, Berichte Deutsche Botanische Gesellschaft, vol. 10, p. 637.*)

For previous introduction, see S. P. I. No. 42327.

48674. *HEIMIA MYRTIFOLIA* Cham. and Schlecht. Lythraceæ.
(*Nesaea myrtifolia* Desf.)

A small, densely leafy ornamental shrub with deep yellow flowers; native to Brazil. (Adapted from *St. Hilaire, Flora Brasiliæ Meridionalis, vol. 3, p. 138.*)

For previous introduction, see S. P. I. No. 36025.

48675. *HELIANTHEMUM CHAMAECISTUS* Mill. Cistaceæ.
(*Cistus lusitanicus* Mill.)

This beautiful evergreen shrub grows quickly into a shapely bush bearing multitudes of large white flowers with crimson spots at the bases of the petals. The narrow, bright-green leaves are slightly viscous. It flowers abundantly during the summer, is drought resistant, and if planted in a border extends itself 2 or 3 feet over. The original species is a native of Britain; it is readily propagated by cuttings and will grow in any moderately light soil. Bees are exceedingly fond of the *rock rose*, as this genus is called; and during dry seasons, when many other flowers fail, it is much frequented by bees; this probably accounts for the many natural hybrids known to botanists. (Adapted from *Flora and Sylva, vol. 2, p. 44; Gardening Illustrated, vol. 22, p. 212; and Loddiges, Botanical Cabinet, vol. 3, p. 202.*)

48676. *HOMERIA COLLINA* (Thunb.) Vent. Iridaceæ.
(*Moraea collina* Thunb.)

A perennial plant, native to the Cape of Good Hope, with a globose corm covered with fibrous coats, and usually one convolute-concave narrow leaf, much longer than the stem. The erect stem bears one or more clusters of handsome red-orange flowers grouped in twos or threes. (Adapted from *Curtis's Botanical Magazine, pl. 1033.*)

48677. *JODINA RHOMBIFOLIA* Hook. and Arn. Santalaceæ.

Quebrachillo. Generally a low, bushy, slender tree with 3-pointed spiny leaves. The wood is white and smooth; the bark is thick. It is native to Brazil. (Adapted from *Venturi and Lillo, Contribucion al Conocimiento de los Arboles de la Argentina, p. 92.*)

For previous introduction, see S. P. I. No. 33974.

48657 to 48688—Continued.

48678. MANIHOT TWEEDIEANA Muell. Arg. Euphorbiaceæ.

A wild Brazilian species from which the Indians are said to obtain edible varieties by cultivating the plants for a few years.

For previous introduction, see S. P. I. No. 47971.

48679. MIMOSA RAMULOSA Benth. Mimosaceæ.

A small, much-branched shrub from Brazil, up to 5 feet high, with spiny stems, petioles, and peduncles. The solitary flower heads, which appear in the spring, are covered with inverted prickles. The nearly cylindrical pods are clothed with stout spines. It is quite similar to *Mimosa ciliata*, from which it is distinguished principally by its unjointed pods and its 3-nerved leaflets. (Adapted from *Arechavaleta, Flora Uruguay, vol. 1, p. 427.*)

48680. MIMOSA URUGUENSIS Hook. and Arn. Mimosaceæ.

A small, branched shrub found along the banks of the R'io Uruguay, 2 to 3 meters high, with a few stout, strong, straight spines. The small cylindrical shoots are lustrous and smooth. The calyx is very short, the corolla 3 to 4 mm. and glabrous; the pod is 2 to 2.5 cm. long and 4 to 6 mm. broad. (Adapted from *Arechavaleta, Flora Uruguay, vol. 1, p. 431.*)

48681. MYRRHINIUM RUBRIFLORUM (Camb.) Berg. Myrtaceæ.

A forest tree from Brazil, with the young branches compressed and the puberulent leathery leaves soon becoming glabrous. The purplish flowers are in axillary cymes. (Adapted from *Martius, Flora Brasiliensis, vol. 14, pt. 1, p. 466.*)

48682. OCOTEA ARECHAVALETAE Mez. Lauraceæ.

"A tree, 10 to 12 meters high, with oval, entire, coriaceous leaves, shining green on top and pale green on the under side. The dark-yellow flowers are followed by dark-brown drupaceous fruits." (*Guillot.*)

48683. PASSIFLORA ADENOPODA Moc. and Sesse. Passifloraceæ.

A Mexican ornamental woody climber having cordate leaves with five ovate-acute lobes. The petioles are glandular and the bracts serrate incised. The fruits are inedible. (Adapted from *De Candolle's Prodrumus, vol. 3, p. 330.*)

48684. POMADERIS APETALA Labill. Rhamnaceæ.

A tree occasionally attaining a height of 60 feet, but usually smaller; native to southeastern Australia. The foliage is eaten readily by stock, often in preference to their customary feed. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 416.*)

48685. PROSOPIS NANDUBEY Lorentz. Mimosaceæ.

A glabrous tree of medium size, frequent in the mountains of Uruguay. The numerous small flowers appear in spring. The pods are falcate or semicircular, with a pulp of acid flavor. The wood is used industrially because of its lasting qualities. (Adapted from *Arechavaleta, Flora Uruguay, vol. 1, p. 419.*)

48686. QUILLAJA BRASILIENSIS (St. Hil. and Tul.) Mart. Rosaceæ.

Quillay, or *japon de palo*. A Brazilian tree, 6 to 8 meters high, with an erect trunk and an open crown. The alternate leaves are oblong-lanceolate and the white flowers are in distinct corymbs. The regular

48657 to 48688—Continued.

shape and very leafy crown of the tree make it a striking ornamental, especially when it is in flower. The bark and the wood cut into chips form articles of commerce from which are extracted certain constituents which are used in the saponification of greasy substances. (Adapted from *Arechavaleta, Flora Uruguaya, vol. 1, p. 451.*)

48687. SCHINUS LENTISCIFOLIUS March. Anacardiaceæ.

A small Brazilian tree, 50 to 100 cm. high, with crooked branches and dark ashy bark. The compound leaves are composed of 4 to 6 pairs of pinnæ with winged petioles. The whitish flowers in numerous axillary panicles appear in spring. (Adapted from *Arechavaleta, Flora Uruguaya, vol. 1, p. 297.*)

48688. SYMPHYOPAPPUS sp. Asteraceæ.

An ornamental composite received as *Eupatorium montevidense*, but identified by Dr. Blake as a species of *Symphiopappus*

48689 to 48750.

From China and Japan. Collected by Mr. J. B. Norton, Agricultural Explorer of the Bureau of Plant Industry. Received November 26 and December 1, 1919. Quoted notes by Mr. Norton.

48689. ALLIUM sp. Liliaceæ.

"(No. 18. Nagasaki, Japan. October 12, 1919.) A clustered garlic commonly grown around Nagasaki; also found wild, probably as an escape."

48690. AMARANTHUS GANGETICUS MELANCHOLICUS (L.) Voss. Amaranthaceæ. Joseph's-coat.

"(Nagasaki, Japan. October 21, 1919.) Closely related to *Amaranthus retroflexus*, with showy red, yellow, white, and green leaves; common in flower beds. This old foliage plant deserves attention from plant breeders, and if properly selected should produce a highly ornamental foliage plant for bedding purposes."

48691 to 48695. AMYGDALUS PERSICA L. Amygdalaceæ. Peach (Prunus persica Stokes.)

48691. "(No. 3a. Foochow, Fukien, China. July 10, 1919.) The Pang San, or 'white peach,' from the market. Grown near Foochow, maturing in July and August."

48692. "(No. 4a. Foochow, Fukien, China. July 10, 1919.) The 'big red peach' (Chinese name translated) from the market. Grown near Foochow; matures from June to the middle of July."

48693. "(No. 4b. Foochow, Fukien, China. July 10, 1919.) The 'small red peach' (Chinese name translated) from the markets. Grown near Foochow; matures from June to the middle of July."

48694. "(No. 3b. Foochow, Fukien, China. July 10, 1919.) The 'Ngie,' a white peach obtained in the markets. Matures in July and August."

48695. "(No. 5. Foochow, Fukien, China. July 10, 1919.) Obtained from the market. A peach with dark-red flesh. While lacking in flavor when raw, this peach has a most excellent flavor when stewed with sugar. The juice becomes the color of dark Burgundy; this might be wonderful as a coloring for soft drinks."

48689 to 48750—Continued.

48696. *ARDISIA JAPONICA* (Thunb.) Blume. Myrsinaceæ.

"(Kobe, Japan. October 26, 1919.) A low, red-berried shrub growing in the woods above Kobe. This plant would probably make a very good Christmas green, as the berries probably remain fresh through the early winter."

48697. *ASPARAGUS LUCIDUS* Lindl. Convallariaceæ. **Asparagus.**

"(Kuliang Hills, near Foochow, Fukien, China. August 10, 1919.) A climbing vine of great beauty, growing commonly on the moist wooded slopes of ravines. Its graceful foliage and habit make it very attractive. The fleshy roots are said to be used by the Chinese for conserves."

48698. *AVERRHOA CARAMBOLA* L. Oxalidaceæ. **Carambola.**

"(Foochow, Fukien, China. September 17, 1919.) From the market. A characteristic fruit of Foochow at this season. The Chinese name means 'foreign peach,' indicating a recent introduction into this region. It does not seem to be eaten freely by the Chinese, perhaps because of its acid flavor, but it is found in all the better fruit markets."

48699. *BENZOIN CITRIODORUM* Sieb. and Zucc. Lauraceæ.

"(Kuliang Hills, near Foochow, Fukien, China. August 1, 1919.) A shrub or small tree with a lemon-verbena odor in the leaves and fruit. It is ornamental in appearance with its graceful habit and leaves. It is heavily loaded with oily berries; possibly this tree will yield a commercial oil more cheaply than lemon grass (*Cymbopogon citratus*)."

48700. *CANNA* sp. Cannaceæ. **Canna.**

"(Foochow, Fukien, China. September 15, 1919.) Growing in ditches in cultivated land; not used by the Chinese."

48701. *CELOSIA CRISTATA* L. Amaranthaceæ. **Cockscomb.**

"(Foochow, Fukien, China. September 15, 1919.) A very fine variegated yellow and red cockscomb, grown in pots on the front steps of the Y. M. C. A. building. The plants are cut back and made to branch so that one plant has many heads, which vary in color from red to light yellow."

48702. *CEPHALANTHERA* sp. Orchidaceæ. **Orchid.**

"(No. 16. Nagasaki, Japan. October 20, 1919.) From the grounds of the American consulate. An ornamental orchid growing in soil in large clumps like an iris. The flowers are said to be very beautiful."

48703. *COIX LACRYMA-JOBI* L. Poaceæ. **Job's-tears.**

"(Foochow, Fukien, China. September 15, 1919.) Seed from a plant growing as an escape along a ditch in the garden section of Nantai Island."

48704. *DIANTHUS CHINENSIS* L. Silenaceæ.

"(Mogi, near Nagasaki, Japan. October 14, 1919.) A cultivated single garden pink; no double varieties in this vicinity. Introduced for genetic work on inheritance of doubling."

48705. *DIOSCOREA* sp. Dioscoreaceæ. **Yam.**

"(No. 13. Nagasaki, Japan. October 14, 1919.) For experimental use."

48689 to 48750—Continued.

48706. *DIOSCOREA* sp. Dioscoreaceæ.

Yam.

"(No. 14. Nagasaki, Japan. October 14, 1919.) For experimental use."

48707. *DURANTA REPENS* L. Verbenaceæ.

"(Foochow, Fukien, China. September 15, 1919.) *Duranta repens* is probably the most common flowering shrub around Foochow. It is not only planted as a hedge in many native and foreign gardens, but grows as an escape everywhere. Its nodding racemes of blue flowers and persistent golden yellow berries which cover the unpruned plants give a very pleasing appearance to the dusty roadsides. As a close-pruned hedge *Duranta* is quite satisfactory to many foreign residents, as it stays green better than many other plants and quickly fills up gaps caused by neglect or typhoons."

48708. *EURYA JAPONICA NITIDA* (Korth.) Dyer. Theaceæ.

"(Kuliang Hills, near Foochow, Fukien, China. August 1, 1919.) 'Inkberry,' a small evergreen with black berries growing commonly over the dry hills near Foochow. Of value as a hedge border in the Southern States."

48709. *EUSCAPHIS JAPONICA* (Thunb.) Dipp. Staphyleaceæ.(*E. staphyleoides* Sieb. and Zucc.)

"(No. 12. Saigo, near Nagasaki, Japan. October 10, 1919.) Shrub with bright crimson-purple fruits opening like *Euonymus*."

48710. *FICUS BEECHEYANA* Hook. and Arn. Moraceæ.

Fig.

"(Kuliang Hills, near Foochow, Fukien, China. August 10, 1919.) A wild fig with very strong bast fiber."

48711. *HOMIOCELTIS ASPERA* (Thunb.) Blume. Ulmaceæ.(*Aphananthe aspera* Planch.)

"(No. 7. Nagasaki, Japan. October 22, 1919.) From the grounds of the American consulate. Seed from a Celtislike tree about 40 feet high; very ornamental. The foliage is not dense, and the tree has a light, feathery appearance."

48712. *HUMULUS JAPONICUS* Sieb. and Zucc. Moraceæ.

"(Foochow, Fukien, China. September 10, 1919.) Wild hops growing along a road; much liked by bees."

48713. *IPOMOEA REPTANS* (L.) Poir. Convolvulaceæ.(*I. aquatica* Forsk.)

"(Foochow, Fukien, China. September 15, 1919.) Plant used for greens."

48714 and 48715. *LAGENARIA VULGARIS* Seringe. Cucurbitaceæ. Gourd.

"(Saigo, near Nagasaki, Japan. October 10, 1919.) Seeds of rather high-grade dipper gourds grown at a large orange plantation near Saigo."

48714. "(No. 19.) White-seeded form."

48715. "(No. 21.) Blue-seeded form."

48716. *LILIUM BROWNII* Poit. Liliaceæ.

Lily.

"(Kuliang Hills, near Foochow, Fukien, China. August 25, 1919.) The lily that makes Kuliang beautiful in June and July. The solitary trumpets of this large lily stand out in bold relief against the barren hillsides. The buds and young flowers are light yellow, but the full

48689 to 48750—Continued.

open flower gradually turns to a clear white with purple or brownish stripes on the outer petals. The bulbs are said to be eaten by the Chinese."

48717. *LUFFA CYLINDRICA* (L.) Roemer. Cucurbitaceæ.
(*L. aegyptiaca* Mill.)

"(No. 20. Saigo, near Nagasaki, Japan. October 10, 1919.) A high-grade form of this gourd selected from ripe gourds on the largest orange plantation at Saigo."

48718. *MELASTOMA REPENS* Desr. Melastomaceæ.

"(Kuliang Hills, near Foochow, Fukien, China. August 20, 1919.) A low perennial shrub which bears beautiful roselike flowers all summer long. The flowers last only one day, but because of their great number the shrub is always well covered. The fruits are said to be eaten, but have the lack of flavor so common in Chinese fruits."

48719. *MISCANTHUS SINENSIS* Anders. Poaceæ. **Grass.**

"(Kuliang Hills, near Foochow, Fukien, China. August 1, 1919.) Seeds of 'tiger grass,' the saw-edged grass which is said to kill sheep. The fruiting panicles are used to make the standard brooms of this region. In many respects these brooms are better than those made from broom corn."

48720. *OPHIPOGON JAPONICUS* (L. f.) Ker. Liliaceæ.

"(No. 2. Mogi, near Nagasaki, Japan. October 12, 1919.) This interesting grasslike plant is adapted to stand long drought and is one of the best shade-resisting plants known that could be used for lawn purposes."

48721 and 48722. *OSTERDAMIA JAPONICA* (Steud.) Hitchc. Poaceæ.
(*Zoysia japonica* Steud.) **Grass.**

"(Mogi, near Nagasaki, Japan. October 12, 1919.) Rhizomes from the same lawn from which seed was obtained in June."

48721. "(No. 3.)" 48722. "(No. 4.)"

48723. *PAEDERIA* sp. Rubiaceæ.

"(No. 17. Saigo, near Nagasaki, Japan. October 10, 1919.) Seed of a semiherbaceous vine found along the coast from Foochow northward. A good climber, with large clusters of beautiful white and maroon, or dark purple, flowers. Good for covering fences, walls, etc."

48724. *PANICUM MILIACEUM* L. Poaceæ. **Proso.**

"(Nagasaki, Japan. October 14, 1919.) Apparently escaped from cultivation."

48725. *PHAENOSPERMA GLOBOSA* Munro. Poaceæ. **Grass.**

"(Kuliang Hills, near Foochow, Fukien, China. August 12, 1919.) A tall, large-seeded grass, apparently perennial, growing in a deep ravine. The size of the seeds suggests possibilities of improvement for feed for fowls or stock."

48726. *PITTOSPORUM GLABRATUM* Lindl. Pittosporaceæ.

"(Shanghai, China. October 1, 1919.) From a hedge in the foreign cemetery, Bubbling Wells Road. The evergreen foliage contrasts very well with the orange fruits."

48689 to 48750—Continued.

48727. *PITTSPOBUM TOBIRA* (Willd.) Ait. Pittosporaceæ.

"(Nagasaki, Japan. October 10, 1919.) Grows wild in the hills back of the experiment station. Of value as an ornamental hedge."

48728. *POLYGONUM* sp. Polygonaceæ.

"(Nagasaki, Japan. October 20, 1919.) An ornamental wild vine growing on cliffs and embankments about Nagasaki. At a distance the plant looks like a flowering clematis, making a white mass on the rocks."

48729. *PRUNUS* sp. Amygdalaceæ.

Plum.

"(Foochow, Fukien, China. July 10, 1919.) Obtained in market; a very good green plum."

48730. *PRUNUS* sp. Amygdalaceæ.

Plum.

"(Foochow, Fukien, China. July 10, 1919.) A red plum; very dark flesh; a good variety."

48731. *PRUNUS* sp. Amygdalaceæ.

Plum.

"(No. 8. Foochow, Fukien, China. July 10, 1919.) 'Nai,' a Green Gage plum grown near Foochow; season middle of June to end of July."

48732. *PRUNUS* sp. Amygdalaceæ.

Plum.

"(Kuliang, near Foochow, Fukien, China. July 7, 1919.) A yellowish pink translucent plum of large size, obtained from Mr. James Ford, who obtained the plum from a missionary at Inghok, Fukien. This plum was not seen in the Foochow markets."

48733. *RHUS SUCCEDANEA* L. Anacardiaceæ.

"(No. 11. Saigo, near Nagasaki, Japan. October 10, 1919.) Very common south of Moji; formerly widely cultivated for its oil, but now neglected because of the introduction of kerosene and electricity."

"This plant produces a fruit containing a nut from which, when warmed, an oil is expressed which acquires the consistency of suet and serves for making candles." (*Hogg, Vegetable Kingdom*, p. 242.)

48734. *RHYNCHOSIA VOLUBILIS* Lour. Fabaceæ.

"(No. 15. Saigo, near Nagasaki, Japan. October 10, 1919.) A climbing vine, with ornamental flowers and clusters of bright-red pods."

48735. *ROSA* sp. Rosaceæ.

Rose.

"(No. 8. Saigo, near Nagasaki. October 10, 1919.)"

48736. *ROSA* sp. Rosaceæ.

Rose.

"(No. 9. Saigo, near Nagasaki. October 10, 1919.)"

48737. *ROSA* sp. Rosaceæ.

Rose.

"(No. 23. Saigo, near Nagasaki. October 10, 1919.) A small wild rose growing on the barren hills."

48738. *ROSA* sp. Rosaceæ.

Rose.

"(Nagasaki, Japan. October 14, 1919.) A clustered rose growing wild in the hills."

48739. *RUBUS BUEGERI* Miquel. Rosaceæ.

"(No. 28. Mogi, near Nagasaki, Japan. October 14, 1919.) The common creeping Rubus of this region. The red fruits are good but not large."

48689 to 48750—Continued.**48740. RUBUS SWINHOU Hance. Rosaceæ.**

“(Kuliang Hills, near Foochow, Fukien, China. July 3, 1919.) The berries when ripe come off like thimbleberries; they are of good quality, rich dark red in color, with a distinct pleasantly bitter flavor, which makes them of value in hybridization work. The juice of this berry would add flavor to some of our more tasteless Rubus fruits.”

48741 and 48742. RUBUS TRIPHYLLUS Thunb. Rosaceæ.

48741. “(Kuliang Hills, near Foochow, Fukien, China. October 12, 1919.) A low form, common on the hills.”

48742. “(Kuliang Hills, near Foochow, Fukien, China. September 1, 1919.) A summer-fruited Rubus of good flavor, common in this region.”

48743. SMILAX CHINA L. Smilacaceæ.**Smilax.**

“(No. 10. Saigo, near Nagasaki, Japan. October 10, 1919.) The large bright-red berries make a beautiful show among the dark leaves. The tuberous rhizome has been used for centuries in medicine and is still recognized as having medicinal value.”

48744. SOLANUM sp. Solanaceæ.

“(Kobe, Japan. October 26, 1919.) A showy red-berried Solanum growing in a mountain ravine; suitable for ornamental planting.”

48745. SOLANUM sp. Solanaceæ.

“(Foochow, Fukien, China. September 6, 1919.) A red-fruited annual growing on walls and along roads.”

48746. STRIGA MASURIA (Buch.-Ham.) Benth. Scrophulariaceæ.

“(Kuliang Hills, near Foochow, Fukien, China. July 16, 1919.) One plant, found in barren soil. It has an erect flower stalk with a rather showy creamy-white, 2-lipped flower suggesting a small butterfly orchid.”

48747. SYMPLOCOS CONGESTA Benth. Symplocaceæ.

“(Kuliang Hills, near Foochow, Fukien, China. July 25, 1919.) A small tree or shrub much like the bay tree of formal gardens. Many were seen pruned like the bay trees grown in tubs in America.”

48748. TRICHOSANTHES CUCUMEROIDES (Ser.) Maxim. Cucurbitaceæ.

“(No. 6. Nagasaki, Japan. October 11, 1919.) A climbing vine with very striking scarlet fruit, growing on the fence around the Nagasaki Agricultural Experiment Station citrus orchard.”

48749. VIBURNUM sp. Caprifoliaceæ.

“(Saigo, near Nagasaki, Japan. October 10, 1919.) This plant has clusters of bright-red berries which, combined with the dark-green leaves, make it an ornamental highly appreciated by the residents of this region.”

48750. ZORNIA DIPHYLLA (L.) Pers. Fabaceæ.

“(Foochow, Fukien, China. September 15, 1919.) This plant, which grows wild in the hills, may be of value as forage.”

48751 and 48752. RUBUS MACROCARPUS Benth. Rosaceæ.**Columbian berry.**

From Bogota, Colombia. Seeds and plants purchased from Mr. F. L. Rockwood. Received December 4 and 6, 1919.

48751 and 48752—Continued.

"The berry is not in clusters like the common berry, but on the end of a branch like a rose. There are always several together; they bring the bush down with weight. Some of the berries are over 2 inches long when ripe. One berry, which measured $2\frac{1}{2}$ inches long, dropped to pieces while we were bringing it out of the forest. These berries are developed where there is constant moisture, clouds against the mountains, and a temperature of 65° to 68° F. They grow in abundance near Purification, Tolima, where they are pressed for a juice which is claimed to have medicinal properties for curing blood diseases. The line of mountains from Cibate to Fusagusaga, about 9,000 feet altitude, is very prolific in blackberry plants. These do not grow above the coffee line." (*Rockwood.*)

48751. Seeds.**48752.** Plants.

For previous introduction, see S. P. I. No. 45919.

48753 to 48797.

From Johannesburg, Transvaal. Collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received December 4, 1919. Quoted notes by Dr. Shantz, except as otherwise stated.

48753. *ACACIA CAFFRA* (Thunb.) Willd. Mimosaceæ.

"(No. 119. Taungs, Cape Province. September 30, 1919.) These seeds were collected from small trees on a stony ridge. The tree is used only as a timber tree in making native kraals and for firewood. It is one of the more attractive of the native acacias."

48754. *ACACIA DENTINENS* Burchell. Mimosaceæ.

"(No. 92. Kimberley, Cape Province. September 26, 1919.) Seeds of *Acacia dentinens*, the most prominent acacia of this region. A small, attractive tree, useful only as an ornamental. It grows especially well on rocky, shallow, red soil over limestone."

48755. *ACACIA STOLONIFERA* Burchell. Mimosaceæ.

"(No. 120. Taungs, Cape Province. September 30, 1919.) Seeds of one of the most attractive and fragrant plants I have found thus far. It is a low bush with upright branches, very little secondary branching, and produces a mass of white sweet-scented flowers. It comes into flower very early and is very pretty and attractive at that time. It is an exceptionally decorative plant."

48756. *ADENIA* sp. Passifloraceæ.

"(No. 151. East of Pretoria, Transvaal. October 12, 1919.) A plant with a large (storage) stem; interesting chiefly for botanical gardens, etc."

48757. *ATRIPLEX* sp. Chenopodiaceæ.

"(No. 89. Kimberley, Cape Province. September 21, 1919.) Probably one of the introduced species from low land near Kimberley. Useful as a forage plant on near-alkali land of the southwestern desert area."

48758. *AVENA SATIVA* L. Poaceæ.**Oats.**

"(No. 102. Kimberley, Cape Province. September 27, 1919.) Oats in market; grown in Orange Free State."

"A small-kerneled variety probably similar to the Sixty-Day oat." (*Warburton.*)

48753 to 48797—Continued.

48759. *AVENA STERILIS* L. Poaceæ.

Oats.

"(No. 103. Kimberley, Cape Province. September 27, 1919.) Oats in market; grown in western province, probably near the Cape."

"The north African (Algerian) type, also commonly grown in South Africa." (*Warburton*.)

48760 to 48762. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon.

48760. "(No. 80. Prieska, Cape Province. September 27, 1919.) Seeds of a Kafir melon grown extensively throughout South Africa; used as feed for stock and also for pickles and preserves. After five months on the shelf at Prieska the flesh of this melon was firm and still white. It is especially valuable on account of its long-keeping qualities. Should do well anywhere in the United States. Grown along with corn by the Kafirs, either under irrigation or under semihumid conditions. It pushes into dry land, but not so far as No. 81 [S. P. I. No. 48761]."

48761. "(No. 81. Seeds of m'tsama melon of the Kalahari collected at Gibeon, German Southwest Africa, by G. W. Lawrence, of Prieska.) This melon grows wild on the great desert and constitutes the chief water supply to travelers and dwellers of that region. This seed may contain both the bitter and the sweet varieties. It should be planted at the beginning of the summer and winter rainy period on both dry land and irrigated land (to insure a supply of seed) at San Antonio, Sacaton, Yuma, Indio, Mecca, Hazen, and Chico.

"By far the most important plant of the Kalahari Desert, if we except the forage grasses, it is valued here as a stock feed and as a food for the natives. It is cooked and the water extracted. Buried in the soil it forms a reservoir of water and a storehouse of food for both man and beast. I see no reason why it should not thrive in a wild state in our warmer deserts, and it may survive on dry lands throughout the Great Plains and intermountain region."

48762. "(No. 117. Taungs, Cape Province. September 30, 1919.) Watermelon seeds from Chief Malala, one of the Batlapin tribe of Bechuanas of the Taungs district (1,400 square miles). These seeds represent the type of watermelon grown by the natives. They are planted about November 1, when the spring rains come. This melon should be adapted to conditions of the South and Southwest, and possibly the Great Plains. Taungs is a region of scattered camel thorn over a grassland cover somewhat more luxuriant than our mesquite country in Texas. The soil is deep, red, sandy, and shows no hardpan. Apparently, the natives grow fairly good crops of kafir, mealies, and beans. They also keep cattle."

48763. *CITRUS* sp. Rutaceæ.

"(No. 155. Pretoria, Transvaal. October 13, 1919.) Seeds of a rough lemon used widely as a stock for citrus. These seeds were taken from fruit grown on the grounds at Pretoria. The seeds were not in the center of the fruit, but often far out toward the rind. The flavor of the over-ripe lemons is very good. The fruits are about 1½ inches in diameter."

48753 to 48797—Continued.

48764 to 48767. *CUCURBITA MAXIMA* Duchesne. Cucurbitaceæ.

Pumpkin.

48764. "(No. 83. Upington, Cape Province. September 18, 1919.) A large light-colored pumpkin, a staple feed for stock and also for the table, where it is served as we serve squash. This strain is probably well known and is one of the more common types of Boer pumpkin grown throughout South Africa. Almost every kraal has a quantity of these pumpkins on the flat roofs, where they constitute a reserve food supply for man and beast. Produced in a climate similar to that at Yuma, Ariz."

48765. "(No. 118. Taungs, Cape Province. September 30, 1919.) From Chief Malala, of the Batlapin tribe of Bechuanas of the Taungs district (1,400 square miles). This pumpkin is grown with mealies (corn) or kafir, one of the staple crops."

48766 and 48767. "(No. 121. From Kenkelbosch, Transvaal, September 10, 1919.) A few seeds, somewhat smaller than No. 83 [S. P. I. No. 49764], secured from a cattle train. Cattle are fed largely on pumpkin in this section, and this is the variety most often seen."

48766. Brown seeds.

48767. White seeds.

48768. *DIMORPHOTHECA SPECTABILIS* Schlechter. Asteraceæ.

"(No. 152. East of Pretoria, Transvaal. October 12, 1919.) Seeds of an attractive flowering composite with a daisylike or chrysanthemumlike flower. Plants of this character should form a pleasing variety, especially when we see the same old asters, marigolds, etc., in every garden in the world. The plant is very attractive and may prove especially suited to our drought country, the Great Plains and western desert."

48769. *GAZANIA* sp. Asteraceæ.

"(No. 90. Kimberley, Cape Province. September 22, 1919.) A cichoriaceous plant with orange-colored 'single' flowers, 1 to 1½ inches across, produced in great numbers and very attractive border. There seem to be several species similar to this one, some of them white."

48770 to 48772. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(Sorghum vulgare Pers.)

48770. "(No. 111. Kimberley, Cape Province. September 27, 1919.) From the market in Kimberley; ordinary Kafir corn, probably grown in Orange Free State."

48771. "(No. 112. Kimberley, Cape Province. September 27, 1919.) From the market in Kimberley. Egyptian Kafir corn, probably grown in Orange Free State."

48772. "(No. 115. Taungs, Cape Province. September 30, 1919.) *Kafir*. I was unable to see any but the old fields where some of the stubble remained. The kafir is planted November 1, or as near that date as the spring rains permit. It is planted on ground plowed with a moldboard plow but not worked level. In June or July it is harvested, thrashed by the women with a flail, and winnowed in the wind. The seeds are ground by hand on a flat stone and used as a porridge. The stalks, leaves, etc., are

48753 to 48797—Continued.

fed to cattle. The rainfall in Taungs is about 20 inches, the temperature high, and the soil a deep red sandy loam.

"There appears to be little sale for kafir corn. Mealies (corn) is a money crop, kafir a food crop. From the size of the stems, this seems to be a rather small variety."

48773. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ.

Barley.

"(No. 108. Kimberley, Cape Province, September 27, 1919.) A hulled awned barley sold in market. Grown in Orange Free State."

48774. *LATHYRUS SATIVUS* L. Fabaceæ.

Biſter vetch.

"(No. 97. Kimberley, Cape Province. September 27, 1919.) These seeds were found in bulk in the market mixed with the garden pea, *Pisum sativum*. They were probably all grown at Cape of Good Hope and in the Cape district."

48775 and 48776. *MEDICAGO SATIVA* L. Fabaceæ.

Alfalfa.

48775. "(No. 84. Upington, Cape Province. September 18, 1919.) This alfalfa is the type grown on the Orange River. Small fields of alfalfa are the chief source of feed aside from the native grasses. This plant, as seen growing at Upington, looks much like Peruvian alfalfa. It has grown under conditions similar to those at Yuma, Ariz., and the southwestern desert region. (The *Province* variety grown most extensively of any in South Africa seems to be more like our *Grimm*.) This may possibly be that variety. I have no name for it. The plant is always known as *lucern* in South Africa."

48776. "(No. 104. Kimberley, Cape Province. September 27, 1919.) Alfalfa. Bulk seed sold in market at Kimberley, probably the variety known as *Province*, a favorite strain in South Africa."

48777. *MIMUSOPS ZEYHERI* Sond. Sapotaceæ.

"(No. 154. East Pretoria, Transvaal. October 12, 1919.) Seeds of *Mimusops zeyheri*, a yellow fruit about 1 inch long, with dry sweet flesh, similar to that of a jujube. This is apparently a very large fruited species of this genus, of which the fruits are said to be delicious. I did not have an opportunity to test them, for I could not find the tree from which the fruits came, and only those not thoroughly ripe had been cast aside by the children who were eating them. It may be well worth cultivating and should be tried first in the South and West (southern Texas seems about the best place, although it may grow much farther north)."

For previous introduction, see S. P. I. No. 29373.

48778. *PENNISETUM GLAUCUM* (L.) R. Br. Poaceæ.

Pearl millet.

(*P. typhoideum* Rich.)

"(No. 113. Kimberley, Cape Province. September 27, 1919.) Pennisetum from market; said to be grown in Rhodesia or Transvaal. A cereal common in northern and central Africa."

48779 and 48780. *PHASEOLUS VULGARIS* L. Fabaceæ.

Common bean.

48779. "(No. 95. Kimberley, Cape Province. September 27, 1919.) A Kafir native bean sold in bulk in the market, probably grown in Natal by the natives. It is striped and a purer type than No. 94 [S. P. I. No. 48791]."

48753 to 48797—Continued.

48780. "(No. 96. Kimberley, Cape Province. September 27, 1919.) *Sugar beans* or *butter beans*, grown in the Cape region and sold throughout Cape Province. One of the most common beans for human consumption."

48781 to 48783. *PISUM SATIVUM* L. Fabaceæ. **Garden pea.**

"(Nos. 98 to 100. Kimberley, Cape Province. September 27, 1919.) Peas in bulk from the market, probably all grown at Cape of Good Hope and in the Cape district. These are all in the trade, and apparently they are staple food varieties."

48781. "(No. 98.) Very badly mixed."

48782. "(No. 99.) Looks like a field pea."

48783. "(No. 100.) Probably *Stratagem*."

48784. *SALVIA CLANDISTINA ANGUSTIFOLIA* Benth. Menthaceæ.

"(No. 93. Kimberley, Cape Province. September 26, 1919.) A small sage which is a biennial with very fragrant foliage. I have not seen it in flower."

48785. *SECALE CEREALE* L. Poaceæ. **Rye.**

"(No. 101. Kimberley, Cape Province. September 27, 1919.) This seems to be a winter rye grown in Orange Free State, near Kimberley. These seeds were obtained from the market."

48786. *STRYCHNOS PUNGENS* Solereder. Loganiaceæ.

"(No. 149. East of Pretoria. October 12, 1919.) *The Kafir orange*. A small tree bearing a large pummelolike fruit with large, pulp-covered seeds."

For previous introduction, see S. P. I. No. 34712.

48787. *THEMEDA TRIANDRA* Forsk. Poaceæ. **Grass.**

"(No. 87. Kimberley, Cape Province. September 21, 1919.) A rather coarse *Andropogon*like grass occurring occasionally on sandy land. This is one of the most dominant grasses of the sweet veld of Africa."

For previous introduction, see S. P. I. No. 47812.

48788 and 48789. *TRITICUM AESTIVUM* L. Poaceæ. **Common wheat.**
(*T. vulgare* Vill.)

48788. "(No. 106. Kimberley, Cape Province. September 27, 1919.) Wheat from the Douglas district; as sold in the market."

48789. "(No. 107. Kimberley, Cape Province. September 27, 1919.) Wheat from near Kimberley on the Modder River, Orange Free State."

48790. *TRIUMFETTA TRICHOCARPA* Sond. Tiliaceæ.

"(No. 150. East Pretoria, Transvaal. October 12, 1919.) A rather inferior fiber plant. It may have other properties worth considering."

48791 to 48793. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. **Cowpea.**

48791. "(No. 94. Kimberley, Cape Province. September 27, 1919.) Kafir beans, mostly black, grown by natives and used by them. Collected in market where they are sold in bulk. Probably grown in Orange Free State. Seed mixed; no attempt made to separate the different types. These native beans should be valuable as dry-land crops, and many types of cowpeas may be separated from them. They constitute one of the chief native foods, next to corn and kafir."

48753 to 48797—Continued.

48792. "(No. 105. Kimberley, Cape Province. September 27, 1919.) Kafir beans, known as 'native beans,' grown from Natal to the Zambezi River. They are sold to natives, but are not used to any extent for food by Europeans."

48793. "(No. 116. Taungs, Cape Province. September 30, 1919.) Kafir beans grown by Bechuanas of the Batlapin tribe. The climate is extremely dry except for a short rainy period coming in spring, November 1. Beans grown in dry land. Several types can be separated from this lot. Usually the natives dispose of all their seed and bring back seed from the local 'shop.' Should be tried in the Great Plains, the Southwest, and the South. The soil here is deep and red, but the rainfall is not more than about 20 inches. It is warm, however, and in all probability these beans will do better south of central Colorado than north of that line."

48794 and 48795. *ZEA MAYS* L. Poaceæ. Corn.

48794. "(No. 109. From market at Kimberley, Cape Province. September 27, 1919.) Corn used chiefly for stock feed; a yellow flintlike variety. Probably grown in Orange Free State."

48795. "(No. 114. Taungs, Cape Province. September 29, 1919.) Corn grown by the Batlapins, a tribe of Bechuanas, whose chief, Malala, lives in the staat at Taungs. This type would seem to be ill adapted to so dry a country. The rainfall appears to be about 20 inches. Corn is planted November 1, or when the rains begin, and harvested about June or July. The soil is a deep-red sandy loam. Conditions would require a drought-resistant corn adapted to high temperature, conditions such as are found in western Texas. There seems to be little attempt in Africa to adapt crops to conditions not favorable for them. Corn is selected which gives the best yield in the best corn country and this variety is then grown everywhere. Nor is a short-season corn substituted when rains delay the planting to too late a date; the crop is given up for that year."

48796. *ZIZIPHUS* sp. Rhamnaceæ.

"(No. 153. East of Pretoria, Transvaal. October 12, 1919.) A native *Ziziphus*, prolific, and an attractive ornamental. Adapted to southern and southwestern Texas."

48797. *MORAEA* sp. Iridaceæ.

"(No. 85. Krankuil, Cape Province. September 19, 1919.) Seed (rather immature) of an attractive yellow lily very abundant along the track at Krankuil. Found in desert regions similar to those in the Southwestern States."

48798 and 48799.

From Johannesburg, Transvaal. Bulbs collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received December 4, 1919. Quoted notes by Dr. Shantz.

48798. *MORAEA* sp. Iridaceæ.

"(No. 91. Longlands, Cape Province. September 26, 1919.) A very pretty plant like a small iris, but with long leaves and bulbs buried deep in the soil; seems a troublesome plant in irrigated lands where

48798 and 48799—Continued.

wild, but should prove valuable as a decorative plant. The flowers are unusually attractive."

48799. (Undetermined.)

"(No. 88. Kimberley, Cape Province. September 21, 1919.) Unidentified bulbs called *fighol*, probably poisonous to stock, since the bulbs are often found on the top of the ground. Said to have a white flower; may be valuable as an ornamental. Found growing in sandy land north of Kimberley."

48800 and 48801. ACROTRICHE DEPRESSA R. Br. Epacridaceæ.

From Blackwood, South Australia. Presented by Mr. Edwin Ashby. Received December 5, 1919. Quoted notes by Mr. Ashby.

48800. "The better sort from the Barossa Ranges, where they grow in decomposed quartzite with a good deal of humus on rocky hillsides often lightly shaded by gum trees; the rainfall here is at least 25 inches. The fruit is very juicy and is astringent until cooked. The bushes are about 2 feet high. I have a dozen plants in my wild plant garden and in the cultivated part as well. The latter are doing best; they are too young to fruit but will do so next year. The one bush which is bearing carries a good many pints of fruit in masses low down on the main stems, so that they can be gathered in handfuls. The seed germinates very slowly, and will probably be more successful if treated with boiling water. I had one large shrub which died in the drought of 1914; I burnt the dead bush and young plants made their appearance only last spring; it is therefore likely that seed will germinate after being several years in the ground."

48801. "The best known variety of our native currant, which is becoming very scarce since the breaking down of its habitat, the mallee, or dense brushwood, the thicket formed by low-growing eucalypts. The leaf of this variety is smaller than that of the Barossa Range form, as is also the fruit. It grows in the dry country where the rainfall is often under 15 inches and the soil sandy, usually a red sand with superficial limestone rock (travertin)."

Received as *Styphelia depressa*, a later name for the same plant.

48802 to 48833.

From Pretoria, Transvaal. Plant material collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received December 16, 1919. Quoted notes by Dr. Shantz.

48802. ACACIA ROBUSTA Burchell. Mimosaceæ.

"(No. 158. West of Pretoria. October 14, 1919.) Seed of *Acacia robusta*, a medium-sized tree, good for tannin."

48803. ACACIA SCORPIOIDES (L.) W. F. Wight. Mimosaceæ.
(*A. arabica* Willd.)

"(No. 144. Wonderboom, Pretoria. October 12, 1919.) A valuable tannin plant. Pods excellent feed, very heavy and nutritious. It is also an attractive tree.

48804. BURKEA AFRICANA Hook. Cæsalpiniaceæ. **Rhodesian ash.**

"(No. 142. Wonderboom, Pretoria. October 12, 1919.) A beautiful tree; one of the most widely distributed of the African trees."

48802 to 48833—Continued.

A small tree, 6 to 10 feet high, with an open, broad crown. It is found in sandy forests in Mata de Monino. It flowers in November, and the fruits ripen in February. (Adapted from *Hiern, A Catalogue of Welwitsch's African Plants, vol. 1, p. 304.*)

An illustration of this tree is shown in Plate IV.

48805. *CAILLIEA NUTANS* (Pers.) Skeels. Mimosaceæ.

(*Dichrostachys nutans* Benth.)

"(No. 137. Wonderboom, Pretoria. October 12, 1919.) A beautiful shrub or hedge plant; also valuable for posts (not eaten by termites). It has yellow and purple flowers and large, curly pods. It may stand light frost, possibly heavy, but they do not occur where it is found. It is a tree of good form and should grow anywhere in the South, especially at a place like San Antonio, Tex., where the climatic conditions are similar to those of Pretoria."

48806. *CYPERUS SEXANGULARIS* Nees. Cyperaceæ.

Sedge.

"(No. 173. Nelspruit, Transvaal. October 21, 1919.) Root of a sedge with a hexagonal stem. It has a very strong fiber and is most useful for baskets, mats, rugs, and woven work. One of the most promising plants of this kind thus far seen."

48807. *CARISSA BISPINOSA* (L.) Desf. Apocynaceæ.

Amatungulu.

(*C. arduina* Lam.)

"(No. 140. Wonderboom, Pretoria. October 12, 1919.) A beautiful plant for hedges, which bears a small fruit and has very fragrant flowers and fine foliage. It is very drought resistant here. May be valuable as a breeding stock."

48808. *CHAETOCHELOA ITALICA* (L.) Scribn. Poaceæ.

Millet.

(*Setaria italica* Beauv.)

"(No. 168. Johannesburg, Transvaal. October 17, 1919.) Seed of Boer manna purchased in the market."

48809 and 48810. *COMBRETUM SALICIFOLIUM* E. Mey. Combretaceæ.

48809. "(No. 134. Wonderboom, Pretoria. October 12, 1919.) A valuable tree for semidesert river banks, such as are found in the States of the Southwest and the southern Great Plains; yields quantities of gum. A beautiful tree which grows along all water-courses in this arid country, especially along the Vaal and Orange Rivers. Excellent color and good shade."

48810. "(No. 138. Wonderboom, Pretoria. October 12, 1919.) Another Combretum of similar habit to No. 135, *Combretum* sp. [S. P. I. No. 48812]. There are many species of Combretum in this section; none of them seem as important (to us) as *C. salicifolium*, which should be found useful in the Southwest. Nos. 135 and 138 are good dry-land trees. I have not noticed gum on either, but they are attractive trees and should do well in southern Texas and possibly in southern California. They may be able to stand light frosts."

Probably a form of *C. salicifolium* different from No. 134 [S. P. I. No. 48809].

48802 to 48833—Continued.

48811. *COMBRETUM ZEYHERI* Sond. Combretaceæ.

“(No. 156. West of Pretoria. October 14, 1919.) Seed of large-fruited *Combretum zeyheri*. Probably the largest fruited species of the genus found in the bush veld of this region. It forms an attractive tree.”

48812. *COMBRETUM* sp. Combretaceæ.

“(No. 135. Wonderboom, Pretoria. October 12, 1919.) Grows on dry land away from the river. Not as interesting as No. 134 [S. P. I. No. 48809].”

48813. *CUCURBITA MAXIMA* Duchesne. Cucurbitaceæ. **Pumpkin.**

“(No. 169. Johannesburg, Transvaal. October 17, 1919.) Seeds of the Boer pumpkin purchased in the market. For stock and table use.”

48814. *CUCURBITA PEPO* L. Cucurbitaceæ. **Squash.**

“(No. 170. Johannesburg, Transvaal. October 17, 1919.) Vegetable marrow. *Long White* bush. Seeds purchased in the market. For table use, like a summer squash; may be fried also.”

48815. *ERAGROSTIS ABYSSINICA* (Jacq.) Schrad. Poaceæ. **Teff.**
(*Poa abyssinica* Jacq.)

“(No. 166. Teff seed from The Colonial Seed Supply Co., Newton, Johannesburg. October 17, 1919.) Staple hay crop of the high veld. From what I have seen of teff I could almost write a book. It should be tried on the high Plains as far north as Montana. It is the most important plant next to corn in the Transvaal. It grows where there is summer rain; would probably be no good for the Southwest, except the high grasslands of the boundary region of Arizona and New Mexico, where it might do on the high mesas. But it should grow from Amarillo, Tex., to Judith Basin, Mont. When it does well it makes a wonderful hay crop.”

48816. *LINUM USITATISSIMUM* L. Linaceæ. **Flax.**

“(No. 167. Johannesburg, Transvaal. October 17, 1919.) Seed purchased in the market. Standard flax of the high veld.”

48817. *OSYRIS ABYSSINICA* Hochst. Santalaceæ.

“(No. 143. Wonderboom, Pretoria. October 12, 1919.) A most prized tannin plant. Try in summer-rain region, say Brownsville or San Antonio, Tex.; also Chico, Calif. It produces a leather of an especially desirable color, and if it could be produced would be in great demand as soon as its value became known to tanners. It would be especially valuable for fancy leathers.”

48818. *PENNISETUM CLANDESTINUM* Hochst. Poaceæ. **Kikuyu grass.**

“(No. 174. Nelspruit, Transvaal. October 21, 1919.) Roots of kikuyu grass.”

A perennial running grass which grows well on any soil and adapts itself to the varying climatic conditions of South Africa. It is a summer grass, but withstands a considerable degree of cold. In a wet winter it keeps green all the time, in spite of heavy frosts, and even makes some growth. In the spring it starts growing before the veld grasses. For drought-resistance kikuyu is great and has no rival. When the surrounding veld is dry and withered it remains green, giving one the impression of an irrigated field of forage. All kinds of stock

48802 to 48833—Continued.

are extremely fond of it, prefer it to other grasses, and will even break fences to get it. The food value is very high, being superior to any of our other grasses.

For soiling dairy cows it is the grass par excellence, and we know of no other to equal it in this respect. The grass grows almost as rapidly as lucern, and four or five cuttings can be had in a season. On account of its ability to grow on practically any type of soil and its creeping and bending characteristics, it is an excellent soil binder, on dam walls, on sandy soils, and on eroding slopes. It can be recommended as a grass for planting in a poultry run. Fowls seem very fond of the leaves, and owing to its aggressive nature it can withstand their ravages. Yielding no seed, there is no fear of kikuyu establishing itself voluntarily in an adjoining field. (Adapted from *Agricultural Grasses and Their Culture, Union of South Africa Department of Agriculture Bulletin No. 5, 1918, p. 32.*)

For previous introduction, see S. P. I. No. 41055.

A plat of this grass as it grows wild in Kenia is shown in Plate V.

48819. PHRAGMITES VULGARIS (Lam.) B. S. P. Poaceæ. Grass.

"(No. 136. Wonderboom, Pretoria. October 12, 1919.) A bamboolike plant abundant along the river."

48820. PISUM SATIVUM L. Fabaceæ. Garden pea.

"(No. 171. Johannesburg, Transvaal. October 17, 1919.) A Boer pea which may prove valuable as a summer crop."

48821. RHUS LANCEA L. f. Anacardiaceæ.

"(No. 141. Wonderboom, Pretoria. October 12, 1919.) A fine tree for timber, shade, and browse. This tree deserves careful consideration for southern Texas and the Southwest. It is possible that some of these trees will withstand frost and can be pushed farther north."

48822. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.

"(No. 147. Wonderboom, Pretoria. October 12, 1919.) Castor-oil bean, a common weed in this section. In order not to miss any of the more important strains I am collecting these beans wherever found."

48823. SCLEROCARYA CAFFRA Sond. Anacardiaceæ.

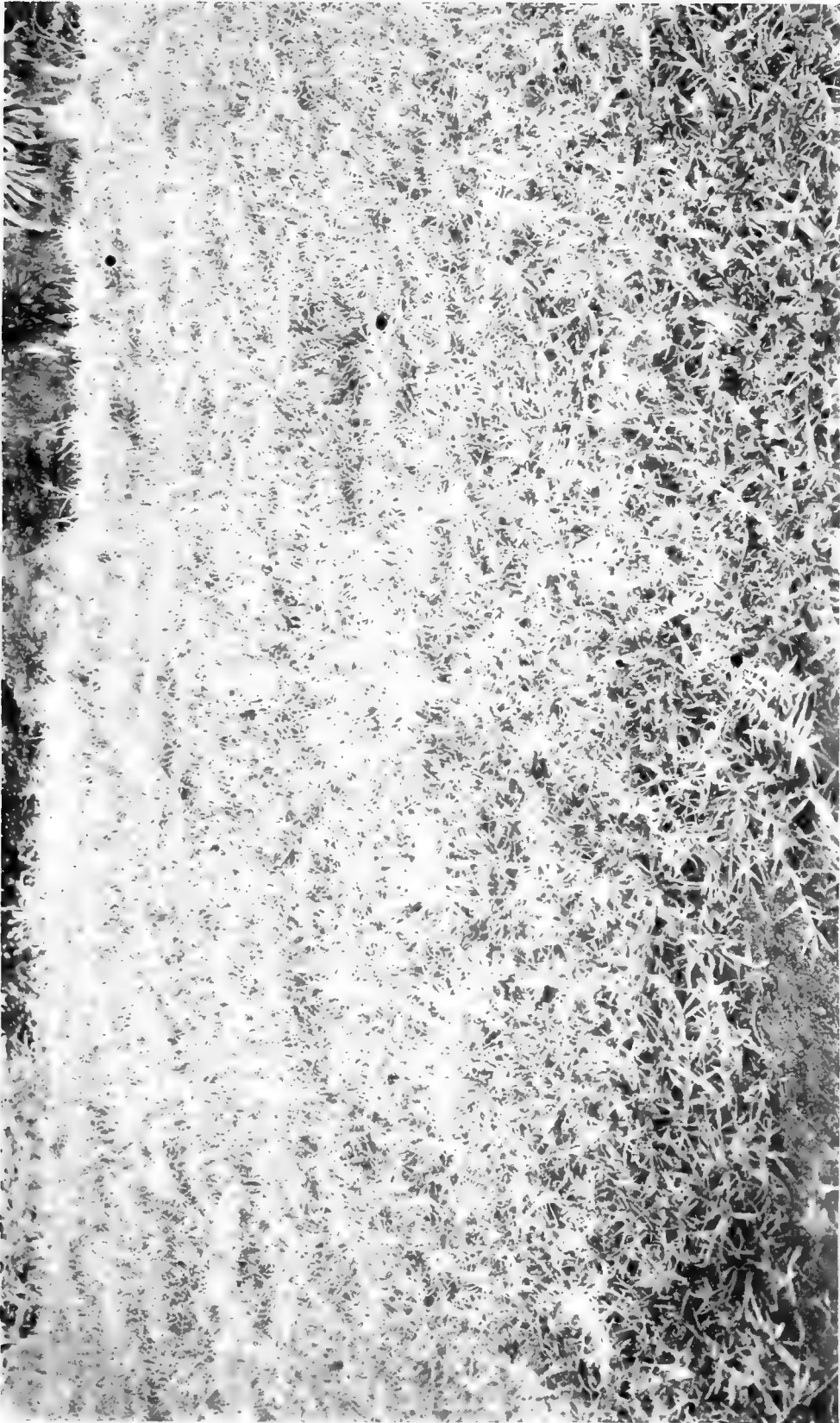
"(No. 139. Wonderboom, Pretoria. October 12, 1919.) *Morula*. A valuable oil-nut tree."

An illustration of this tree is shown in Plate VI.

48824 and 48825. STRYCHNOS PUNGENS Solereder. Loganiaceæ.

48824. "(No. 148. East of Pretoria. October 12, 1919.) Fruit of *Strychnos pungens* (Kafir orange), a large pummelolike fruit with large pulp-covered seeds. A small tree."

48825. "(No. 149a. Nelspruit, Transvaal. October 20, 1919.) This fruit is said to constitute an important element of the elephant feed in Mozambique. The trees are abundant about Lourenco Marques, and the fruit often lies thick on the ground. If poisonous, the poison is probably in the seeds themselves; these would not be digested by the elephant. But according to Marloth the seeds of some of the species are eaten. It is all but impossible to clean the pulp from the seeds; these were scoured in dry sand."



KIKUYU GRASS, ONE OF THE MOST VALUABLE FORAGE GRASSES OF AFRICA. (PENNISETUM CLANDESTINUM HOCHST., S. P. I. No. 48818.)

Kikuyu grass has leaves and creeping stems much like those of carpet grass, though much larger and more succulent. It makes a very dense growth; at first the stems are erect, but when they reach 15 or more inches in height they become very decumbent at the base, matting down so that the lower leaves soon die. Hence, this grass is not well suited for making hay. It bears frost about as well as carpet grass, is much more vigorous and productive, is eaten greedily by horses, cattle, and hogs, and promises to be of great value as a pasture grass in the Southern States. (Photographed by Dr. H. L. Shantz, Meru, Kenya, May 30, 1920.)



THE MORULA, A VALUABLE NUT TREE FROM NORTHERN TRANSVAAL. (SCLEROCARYA CAFFRA SOND., S. P. I. No. 48823.)

For dry, practically frost-free regions, the morula may have value. It bears in great abundance small hard-shelled nuts of very pleasant flavor. The fleshy pulp which surrounds these nuts is also edible. The valuable morula oil is extracted from the kernels. The tree, which grows throughout southern Africa and in Madagascar, seems likely to succeed in some parts of California. (Photographed by Dr. H. L. Shantz, Wonderboom, near Pretoria, Transvaal, October 12, 1919; P36431 FS.)

48802 to 48833—Continued.**48826. VIGNA SINENSIS** (Torner) Savi. Fabaceæ.**Cowpea.**

“(No. 165. Johannesburg, Transvaal. October 17, 1919.) White cowpeas purchased in the market. Standard cowpea of the high veld.”

48827 to 48832. ZEA MAYS L. Poaceæ.**Corn.**

48827. “(No. 164. Johannesburg, Transvaal. October 17, 1919.) A bread mealie eaten green; purchased in the market.”

48828 to 48832. “(Nos. 159 to 163. Pretoria. October 14, 1919.) Ears collected by Madame A. Dieterlin and presented to me by Dr. E. P. Phillips. Types grown by the Basutos. I am sending in the whole ear in the hope that in this way a judgment may be formed in advance as to any value they may have in breeding work. I consider it unusually fortunate that we could obtain these ears, for they come from one of the least disturbed sections of South Africa, since the Basutos still control their country. This French missionary had lived for years with the natives and probably has given us the most important varieties of corn grown by them. Nos. 159 and 163 I should expect to be of especial interest.”

48828. “(No. 159.) Waxy type; mixed.”

48829. “(No. 160.) Yellow flint.”

48830. “(No. 161.) White flint.”

48831. “(No. 162.) White dent.”

48832. “(No. 163.) Small waxy.”

48833. (Undetermined.) Araceæ.

“(No. 172. Nelspruit, Transvaal. October 21, 1919.) Tubers of a callalike aroid found in dry soil.”

48834. CUCUMIS METULIFERUS E. Mey. Cucurbitaceæ.

From Natal, South Africa. Presented by Mr. W. W. Masterson, American consul, Durban. Received December 6, 1919.

“Seed and dried rind of a cucumber that is of a very different variety from the ordinary kind raised in our gardens the world over. * * * The fruits present the appearance of the ordinary cucumber in regard to size and shape, except that they are possibly a little nearer round, and shorter; but the thing that particularly attracts the attention is the long prickles over the outside, like those on the seed pod of a jimson weed. The vegetable is so tender and so easily digested that I have with some difficulty procured this mature specimen for introduction into our country. The taste of the cucumber is there, but the inside of the rind cuts so easily and is so juicy and well flavored that I feel the cultivation of this variety is well worth while.” (*Masterson.*)

48835 to 48837.

From Sydney, New South Wales. Presented by the Forestry Commission of New South Wales. Received December 11, 1919.

48835. ATALAYA HEMIGLAUCA F. Muell. Sapindaceæ.**Cattle bush.**

One of the inland fodder trees which favorably attracted the attention of stock owners in the early days of pastoral occupation. This tree attains a height of about 30 feet, and is found on large tracts

48835 to 48837—Continued.

of the droughty inlands. It has large, whitish leaves and numerous flowers in terminal clusters, and at all stages of its growth is decidedly ornamental. When grass and other herbage fail it is cut down and the leaves fed to sheep and cattle, which seem to thrive on them. (Adapted from *The Pastoral Finance Association Magazine, Sydney, vol. 5, p. 33.*)

48836. GEIJERA PARVIFLOBA Lindl. Rutaceæ.**Wilga.**

A tall shrub or tree, up to 30 feet in height, native to the interior of New South Wales. It has slender branches and narrow leaves, and when full grown is very ornamental, resembling somewhat the weeping willow. Its drought-enduring qualities are remarkable, as it will continue to grow under the most adverse climatic conditions. It is often cut down for feeding to stock, especially sheep, which eat it readily and seem to do well on it. (Adapted from *The Pastoral Finance Association Magazine, Sydney, vol. 5, p. 132.*)

48837. MIDA ACUMINATA (R. Br.) Kuntze. Santalaceæ.**Quandong.**

The quandong, sometimes called "native peach," attains a height of 20 to 30 feet, and is found in the hotter and drier parts of New South Wales. The lanceolate leaves are much relished by cattle, and because of the remarkable drought-enduring properties of this tree it is very valuable in times of scarcity of rain. The fruit is red, from 1½ to 3 inches in circumference, and of considerable economic value. The succulent outer part is edible, and makes an excellent conserve and jelly. The edible kernels have a pleasant flavor and contain a large percentage of oil, which when burned gives a good light. (Adapted from *The Pastoral Finance Association Magazine, Sydney, vol. 5, p. 33.*)

48838. MOURIRIA PUSA Gardn. Melastomaceæ.**Pusa.***(Ciposia mandapuca Alv. Silv.)*

From Minas Geraes, Brazil. Presented by Dr. Alvaro da Silveira, Bello Horizonte. Received December 27, 1919.

"The fruit is edible; the pulp is sweet and of a flavor most pleasing to the natives." (*Silveira.*)

A small tree, about 10 feet high, with an upright stem and horizontal branches. The obliquely globose, edible fruit is as large as that of the common wild cherry. It is called *pusa* by the natives, who esteem it for its sweet pulp and pleasing flavor. (Adapted from *Hooker's Journal of Botany, p. 23.*)

48839. SAMBUCUS NIGRA L. Caprifoliaceæ.**Elderberry.**

From Wiesbaden, Germany. Presented by Mr. Hugo Mulertt. Received October 15, 1919.

"Last year I found growing in an abandoned quarry in the Taunus Mountains, here near the Rhine, a young elderbush (*Sambucus*), bearing apparently for the first time. The fruits instead of being black were greenish golden in color and semitransparent when ripe; the individual berries were about three or four times as large of those of the common *Sambucus nigra* and very sweet and spicy. They were used in cookery and found excellent and quite distinct in taste. The fact, too, that the juice does not stain table linen nor one's teeth is of no little importance. I have propagated it from seeds and cuttings successfully. The bush bore 2½ pounds of fruit last year; this year I gathered 21 pounds from it." (*Mulertt.*)

48840 to 48842.

From Queensland. Presented by Mr. J. A. Hamilton, Kulare, via Cairns.
Received December 4, 1919. Quoted notes by Mr. Hamilton.

48840. BUCKINGHAMIA CELSISSIMA F. Muell. Proteaceæ.

"A very ornamental native tree; much frequented by bees."

A tall tree, up to 60 feet in height, with dark-green leaves 3 to 5 inches long, and large racemes of silvery flowers. (Adapted from *Bentham, Flora Australiensis*, vol. 5, p. 532.)

48841. HELIANTHUS ANNUUS L. Asteraceæ.**Sunflower.**

"A double sunflower; very good."

48842. PITTOSPORUM REVOLUTUM Dryand. Pittosporaceæ.

"An ornamental bush; sweet scented."

A tall shrub with elliptic leaves 2 to 3 inches long, with rusty-pubescent lower surfaces; the pale-yellow flowers are up to half an inch in length. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2654.)

48843 and 48844. TRICHOLAENA ROSEA Nees. Poaceæ.**Natal grass.**

From Auckland, New Zealand. Purchased from Arthur Yates & Co. Received December 4, 1919.

"This is a very striking grass, its highly colored appearance when in flower making it very handsome. It is a vigorous grower and attains a height of 3½ feet. A dense mass of leafy succulent herbage is quickly produced in spring and remains until cut down by heavy frosts. It flowers in November and December, and produces a large amount of seed which germinates freely. It resists drought well, and flourishes in poor sandy soil. For growing as green food for poultry it is very valuable, and can be recommended for sowing in fowl yards which require resting." (*A. H. McDonald, Agricultural Gazette of New South Wales*, vol. 19, p. 122.)

48843. Variety atropurpurea.

48844. Variety rosea.

48845. ROSA LAXA Retz. Rosaceæ.**Rose.**

From Paris, France. Presented by the Hon. Vicary Gibbs, Aldenham House, Elstree, Hertford, England, through Vilmorin-Andrieux & Co. Received December 4, 1919.

"The longer my experience the more I am impressed with the value of this Siberian brier as a stock for use on medium and light soils. And, further, the testimony of those whom I have persuaded to try it has more than repaid me for my championship of this stock." (*George M. Taylor, Florists' Exchange*, May 13, 1916.)

For previous introduction, see S. P. I. No. 47161.

48846. NICOTIANA TABACUM L. Solanaceæ.**Tobacco.**

From Santiago de las Vegas, Cuba. Presented by Dr. M. Calvino, director, Agricultural Experiment Station. Received December 4, 1919.

"This seed is the product of four years of field selection, carried out with the greatest possible care and with the purpose of restoring the old genuine Cuban tobacco, the Havanensis variety. We sent experts to the very best 'vegas' (tobacco fields) in the Vuelta Abajo region, a comparatively small area

in the central portion of the Province of Pinar del Rio, and they selected the very best plant in all the fields which they visited. That seed was brought to the station and we have been keeping up selection of what we have considered to be the best plants, in order to propagate from them." (*Calvino*.)

48847 and 48848.

From Dunedin, New Zealand. Purchased from Nimmo & Blair, Ltd. Received December 5, 1919.

48847. PASPALUM RACEMOSUM Lam. Poaceæ. **Grass.**

"A native of tropical America. Best adapted to moist or alluvial soils of the South. Grows from a rootstock, with rather coarse, tender stems and leaves, reaching a height of about 2 feet. Promising as a hay or pasture grass." (*C. V. Piper*.)

48848. STIPA ELEGANTISSIMA Labill. Poaceæ. **Grass.**

"A native of Australia. Grows well in sandy soil. It has a plumelike spike 6 to 8 inches long, and is frequently used as an ornamental. The leaves are too narrow and stiff to make it of much value for stock, and its sharp-pointed seed with short, stiff reflexed hairs make it objectionable on sheep ranges, where it sometimes works its way through the wool, penetrates the skin, and sometimes even invades the internal organs." (*C. V. Piper*.)

Received as *S. pennata*; a misidentification.

48849 to 48859. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**

(*Sorghum vulgare* Pers.)

From Pretoria, Transvaal. Presented by Madame A. Dieterlen, through Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received December 6, 1919.

"(Nos. 125 to 133b. Seed from Leribe, Basutoland. Collected by Madame A. Dieterlen, French missionary.) Heads from a collection in the National Herbarium at Pretoria collected in Basutoland. A valuable collection accompanied by Basuto names of each variety, with Madame Dieterlen's numbers in parentheses." (*Shantz*.)

48849. "No. 125. (A. D. No. 641g. Collected in 1909.) Called by the natives *lejakane*; said to be degenerated Kafir corn. The word 'hojaka' means to leave one's country to go to another, or one's faith to adopt another. It is a name of derision given by the Basutos to those of their people who have adopted Christianity. They are no longer true or pure Basutos. Thus this grain, when mixed with other kinds, is no longer pure *mabèlè* (the generic name for Kafir corn) but a *lejakane*." (*Dieterlen*.)

48850. "No. 126. (A. D. No. 641b. Collected in 1908.) This variety is called by the natives *Letsoeyane*." (*Dieterlen*.)

48851. "No. 127. (A. D. No. 641a. Collected in 1908.) Generic native name, *mabèlè*; this particular variety is called *Kobo-Kholo*, *Kokobala*, or *Seboeane*." (*Dieterlen*.)

48852. "No. 128. (A. D. No. 641b. Collected in 1908.) Called by the natives *Letsoeyane*." (*Dieterlen*.)

48853. "No. 129. (A. D. No. 698.) Height 5 to 7 feet. Flowers summer to autumn. Cultivated by the Basutos. Native name *ntsoe*. The sweet stem is chewed. A preparation of this and *Erigeron canadense*

48849 to 48859—Continued.

is used for eczema; it is applied to the eruption, which is then rubbed with fat. This operation must be performed by the first cousin of the sick person; otherwise, the natives believe it will have no effect. Said to be indigenous." (*Dieterlen.*)

48854. "No. 130. (A. D. No. 641c. Collected in 1909.) Cultivated by Basutos as Kafir corn. Generic Basuto name is *mabèlè*, but this variety is known as *Seghobane*." (*Dieterlen.*)

48855. "No. 131. (A. D. No. 641f. Collected in 1908.) Native name *pakollane*."

48856. "No. 132. (A. D. No. 641g.) See note with No. 125 [S. P. I. No. 48849]."

48857. "No. 133. (A. D. No. 641d. Collected in 1908.) This special variety is called by the natives *Monkoane*." (*Dieterlen.*)

48858. "No. 133a. (A. D. 641h. Collected in 1909.) Near Phuthiat-sana River. Generic Basuto name *mabèlè*, but this variety is known as *Mothulo*." (*Dieterlen.*)

48859. "No. 133b. (A. D. No. 641e. Collected in 1908.) Generic native name *mabèlè*; name for this variety is *Mosothi*." (*Dieterlen.*)

48860 to 48921.

From Northern Circle, Burma. Presented by Mr. E. Thompstone, Deputy Director of Agriculture. Received December 5, 1919. Quoted notes by Mr. Thompstone, except where otherwise noted.

48860 and 48861. COIX LACRYMA-JOBI L. Poaceæ. **Job's-tears.**

48860. "Small spherical white seed from Mongpai, Southern Shan States."

48861. "Ovoid, large, gray-to-blue seed from the Northern Shan States."

48862 to 48868. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ. **Ma-yuen.**

48862. "Medium-sized, subcylindrical, mixed, white seed, more slender than the preceding number; from Mongpai, Southern Shan States."

48863. "*Mung-gawng-n'baw*, the local Kachin name for an ovoid large-seeded variety collected at Htawgaw, Kachin Hills in the Myitkyina District of northern Burma, February 25, 1919."

48864. "*Mung-gawng-n'hpraw*, the local Kachin name for a small-seeded variety collected at Htawgaw, Kachin Hills, of the Myitkyina District of northern Burma, February 25, 1919."

48865. "Ovoid, large, blue-to-brown, streaked, edible seed from the Southern Shan States."

48866. "Ovoid, large, brown seed from the Southern Shan States."

48867. "Ovoid, large, gray-to-blue seed from the Northern Shan States."

48868. "Small, subspherical, furrowed, white seed from Lauksauk, Southern Shan States."

48869 to 48875. COIX LACRYMA-JOBI STENOCARPA (Oliver) Stapf. Poaceæ.

48869. "Cylindrical, long, blue seed from the Northern Shan States."

48860 to 48921—Continued.

48870. "Cylindrical, long, blue seed from the Northern Shan States."
 48871. "Cylindrical, small, white seed from the Northern Shan States."
 48872. "Large, ovoid, furrowed, gray seed from Lauksauk, Southern Shan States."
 48873. "Medium-sized, cylindrical, white-to-brown seed from Mongpai, Southern Shan States."
 48874. "Medium-sized, subcylindrical, white seed from Mongpai, Southern Shan States."
 48875. "Small, cylindrical, white seed from Mongpai, Southern Shan States."

48876 to 48921. *ZEA MAYS* L. Poaceæ.

Corn.

"This corn collection represents a new type, having a waxy endosperm."
 (G. N. Collins.)

48876. "*Akyán*, a coarse, early variety, ripening in three months, from the Pakokku Hill tracts."
 48877. "*Akyán*, a coarse, late variety from the Pakokku Hill tracts."
 48878. "*Asè*, an early variety of grain maize, ripening in three months; from the Pakokku Hill tracts."
 48879. "*Asè*, a late variety of grain maize from Pakokku Hill tracts."
 48880. "*Black Burmese* maize from the Southern Shan States."
 48881. "Black maize from the Southern Shan States."
 48882. "Fragrant maize from the Southern Shan States."
 48883. "Hard-stemmed maize from the Southern Shan States."
 48884. "*Hsumhsai*, a late variety from the Northern Shan States."
 48885. "*Kala-pyaung* (foreign maize; imported maize) from the Southern Shan States."
 48886. "*Kayin-pyaung-awa* (yellow Karen maize) from the Southern Shan States."
 48887. "*Kayin-pyaung-pyu* (white Karen maize) from the Southern Shan States."
 48888. "*Pyaung-wa-kyit* (yellow hard maize) from the Southern Shan States."
 48889. "*Mine-sauk-taik-apyá-myo* (blue variety from Mine-sauk-taik) from the Southern Shan States."
 48890. "*Nan-mi*, maize from the Southern Shan States."
 48891. "Pink maize from the Southern Shan States."
 48892. "*Po-thu-daw* maize from the Southern Shan States."
 48893. "*Pyaung-amè* (black maize) from the Southern Shan States."
 48894. "*Pyaung-apyá-myo* (blue maize) from the Southern Shan States."
 48895. "*Pyaung-bu-si-apyu-myo* (white-seeded variety of maize) from the Southern Shan States."
 48896. "*Pyaung-bu-si, Pan-yaung-myo* (pink maize) from the Southern Shan States."
 48897. "*Pyaung-gyi-myo, Monè* (large maize from Monè) from the Southern Shan States."

48860 to 48921—Continued.

48898. "*Pyaung-hmwè-asi* (fragrant maize) from the Southern Shan States."
48899. "*Pyaung-kaûk* (crooked maize) from the Southern Shan States."
48900. "*Pyaung-kaukhnyin* (black fragrant) from the Southern Shan States."
48901. "*Pyaung-kaukhnyin*, white, from the Southern Shan States."
48902. "*Pyaung-kyaukhnyin-payaung* from the Southern Shan States."
48903. "*Pyaung-pyu* (white maize, early variety) from the Southern Shan States."
48904. "*Pyaung-pyûk-myo* (maize, boiling variety) from the Southern Shan States."
48905. "*Pyaung-sán, Monè* (grain maize from Monè) from the Southern Shan States."
48906. "*Pyaung-thu-daw* (honest or true maize) from the Southern Shan States."
48907. "*Pyaung-wa-akyán* (coarse yellow maize) from the Southern Shan States."
48908. "*Se-gyi* maize from the Southern Shan States."
48909. "*Shan-pyaung-asi-myo* (Shan grain maize) from the Southern Shan States."
48910. "*Shan-pyaung-pyu* (white Shan maize) from the Southern Shan States."
48911. "*Shan-pyaung-wa* (yellow Shan maize) from the Southern Shan States."
48912. "*Thadin-kyôt-pyaung, Monè* (October maize from Monè) from the Southern Shan States."
48913. "*Thi-kaung-awa* (yellow 'good grain') from the Southern Shan States."
48914. "Unnamed variety from the Northern Shan States."
48915. "*Wét-ma-lût-pyaung-ani-myo* (red dwarf maize) from the Southern Shan States."
48916. "*Wét-ma-lût-pyaung-wa* (yellow dwarf maize) from the Southern Shan States."
48917. "*We-wun-wot-saung*, maize from the Southern Shan States."
48918. "White-seeded variety from the Southern Shan States."
48919. "*Yun-pyaung, apwin-hla-ka-myo, Mine-sauk-taik* (pretty-flowered maize from Mine-sauk-taik) from the Southern Shan States."
48920. "*Yun-pyaung-awa* (yellow maize) from the Southern Shan States."
48921. "*Ywin-pyaung-ni-kyât* (stiff red Ywin maize) from the Southern Shan States."

48922. PENTAGONIA PHYSALODES (L.) Hiern. Solanaceæ.
(Nicandra physaloides Gaertn.)

From Alta Vera Paz, Guatemala. Presented by Mr. Harry Johnson.
 Received December 8, 1919.

"A blue-flowered solanaceous plant; fruit inclosed in husk as in *Physalis*. Flowers campanulate, an inch or more in diameter, light blue with lighter throat; produced singly in the axils of the leaves similar to the Canterbury bell." (*Johnson*.)

48923. ALLIUM ANGULOSUM L. Liliaceæ.

Onion.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received December 9, 1919.

"An onion, originally from Tonkin, French Indo-China, the leaves of which are used like chives." (*Trabut*.)

48924 to 48974. MANIHOT ESCULENTA Crantz. Euphorbiaceæ.

(*M. utilissima* Pohl.)

Cassava.

From the Belgian Kongo. Cuttings presented by Prof. Edmund Leplae, director general, Ministère des Colonies, Brussels, Belgium. Received December 10, 1919. Quoted notes by Prof. Leplae.

48924. "No. 1."

48929. "No. 6."

48925. "No. 2."

48930. "No. 7."

48926. "No. 3."

48931. "No. 8."

48927. "No. 4."

48932. "No. 9."

48928. "No. 5."

"The preceding numbers were without varietal names and are the collection of M. Gisseleire, originally from the Botanic Garden, Buitenzorg, Java."

48933. "No. 10. *Mandungu lopoma*."

48953. "No. 31. *Ysakama*."

48934. "No. 11. *Likimi molembe*."

48954. "No. 32. *Lokaka*."

48955. "No. 33. *Yambevua*."

48935. "No. 12. *Musa gombe*."

48956. "No. 35. *Elemeka*."

48957. "No. 36. *Lokole*."

48936. "No. 13. *Mandungu mokonga*."

48958. "No. 37. *Bolibo*."

48959. "No. 38. *Kanga*."

48937. "No. 14. *Songi*."

48960. "No. 39. *Longere*."

48938. "No. 15. *Molangola*."

48961. "No. 40. *Keka*."

48939. "No. 16. *Ikeke*."

48962. "No. 41. *Gombe*."

48940. "No. 17. *Pensentumba*."

48963. "No. 42. *Yewaka*."

48941. "No. 19. *Ekakasi*."

48964. "No. 45. *Mobwana bilikwi*."

48942. "No. 20. *Bichi-le*."

48965. "No. 51. *Bokoletaka*."

48943. "No. 21. *Bogambo*."

48966. "No. 59. *Langombo*."

48944. "No. 22. *Ketu*."

48967. "No. 63. *Djibondji*."

48945. "No. 23. *Gubu*."

48968. "No. 71. *Yagadjo*."

48946. "No. 24. *Itolo*."

48969. "No. 78." (No name.)

48947. "No. 25. *Bomai*."

48970. "No. 91." (No name.)

48948. "No. 26. *Soli*."

48971. "No. 93. *Emeta*."

48949. "No. 27. *Elemba*."

48972. "No. 103." (No name.)

48950. "No. 28. *Sumboela*."

48973. No. 28438. (No name.)

48951. "No. 29. *Benzo*."

48974. No. 29439. (No name.)

48952. "No. 30. *Songi*."

48975. PHYTOLACCA DIOICA L. Phytolaccaceæ.

Ombu.

From Sawtelle, Calif. Fruits presented by Mr. P. D. Barnhart. Received December 11, 1919.

An ornamental evergreen tree, native to Brazil, ranging from Sao Paulo up to Rio Grande do Sul and Minas Geraes. The wood is used for making boxes

and chests; when reduced to ashes it is a valuable source of potash. The roots are nutritious, and are eaten by pigs; the bark of the roots is medicinal. (Adapted from *Correa, Flora do Brazil*, p. 71.)

For previous introduction, see S. P. I. No. 42542.

48976 to 48979.

From Adelaide, South Australia. Purchased from E. & W. Hackett, Ltd. Received December 12, 1919.

48976. *AGROSTIS NEBULOSA* Boiss. and Reut. Poaceæ. **Grass.**

"*Bouquet grass*. A slender perennial grass, native to the Mediterranean region, grown chiefly as an ornamental for dry bouquets. It has little promise as forage, but may be useful as a turf grass." (C. V. Piper.)

48977. *ASTREBLA TRITICOIDES* (Lindl.) F. Muell. Poaceæ. **Grass.**

"*Mitchell grass*. This is a perennial, native to Australia, where it is highly valued as a range grass and to some extent has been brought into cultivation. Experiments with it thus far in the United States have not shown that it is of any particular promise under the conditions tried, but in view of its high value in Australia further investigations of this kind are being carried on. Like many of our native western grasses, cattle fatten on the grass even after it is entirely dried." (C. V. Piper.)

48978 and 48979. *ORYZOPSIS MILIACEA* (L.) Benth. and Hook. Poaceæ. **Grass.**

48978. "*Smilo grass*. A perennial grass, native to the Mediterranean region, and in Australia it is known as veld grass. In California it has been called smilo grass, San Diego grass, mountain rice, and many-flowered millet. Under Californian conditions it has exhibited considerable promise and may prove to be an important grass. It has been generally introduced into Australia and New Zealand, where it possesses considerable merit." (C. V. Piper.)

48979. Received as *Piptatherum thomasi*.

48980. *MENTHA PIPERITA* L. Menthaceæ. **Peppermint.**

From Sapporo, Japan. Rhizomes presented by Mr. Koji Abiko, agronomist, Hokkaido Agricultural Experiment Station. Received December 12, 1919.

"*Akamura* peppermint, the Japanese variety which yields the most oil. The name *Akamura* means that the plant has red stalks and round leaves. This is the best variety and the one most popularly cultivated in Hokkaido." (Abiko.)

Introduced for experimental purposes.

48981. *CANARIUM INDICUM* Stickm. Balsameaceæ. **Kanari.**
(*C. commune* L.)

From Buitenzorg, Java. Purchased from Mr. R. D. Rands, Department of Agriculture. Received December 13, 1919.

The Java almond, cultivated in the Dutch Indies on account of its seeds, which resemble in form the almonds of *Prunus amygdalus*; they are somewhat longer than these almond kernels, with a slanting surface at the top and two wartlike protuberances on the under side toward the tip. From the kernels, 65.73 per cent oil can be obtained by extraction with petroleum ether; by

pressure 56.12 per cent may be obtained. The pressed residue gives a pleasant cocoalike odor. The contained oil is bright yellow, odorless, of a pure, pleasant taste, and might very well be used as a food fat. The air-dried kernels contain the following constituents (per cent): Fat, 65.73; crude protein, 12.24; crude fiber, 3.81; nitrogen-free extractives, 6.00; ash, 3.19; water, 9.03. (Adapted from *Pastrovitch, Chemiker-Zeitung, No. 63, p. 781.*)

For previous introduction, see S. P. I. No. 43375.

48982 to 49002.

From Castlemaine, Victoria. Presented by Mr. John W. B. Field. Received December 11, 1919.

48982. ACACIA ACUMINATA Benth. Mimosaceæ. Raspberry jam.

An Australian tree, 30 to 40 feet in height, whose wood has a scent resembling that of raspberry jam; hence its name. The wood of this tree is dark reddish brown, close grained, and hard, is suitable for ornamental purposes, and is much sought after for fence posts. (Adapted from *Maiden, Useful Native Plants of Australia, p. 349.*)

48983. CALLITRIS ROBUSTA R. Br. Pinaceæ.
(*Frenela robusta* A. Cunn.)

A tall tree, 60 to 70 feet in height, related to the pine, found throughout Australia, except in the north-central portion. The timber is straight grained, durable, and beautifully figured, varying from light to dark brown, with pinkish streaks. The wood is fragrant, having a somewhat camphoraceous odor, and resists, to a great extent, attacks of white ants. It is used for furniture, flooring, weatherboards, etc. (Adapted from *Maiden, Useful Native Plants of Australia, p. 544.*)

48984. CANNA sp. Cannaceæ. Canna.

"*Field's Branching Scarlet. A great blooming variety.*" (*Field.*)

48985. CANNA sp. Cannaceæ. Canna.

"Very large, yellow, spotted with red. A continuous bloomer." (*Field.*)

48986. EUCALYPTUS ACCEDENS Fitzg. Myrtaceæ. Powder-bark wandoo.

An Australian tree which attains a height of 60 feet, with a crooked trunk 2 feet in diameter, and smooth grayish or white bark. The alternate, ovate or lanceolate leaves are thick, rigid, and pale green, and less than 4 inches in length. Analysis of the bark has shown it to contain nearly 45 per cent of tannic principle. (Adapted from *The Journal of the West Australian Natural History Society, vol. 1, p. 21.*)

48987. EUCALYPTUS CORNUTA Labill. Myrtaceæ.

A rapid-growing Australian tree, usually not of great height, often planted as a windbreak. The wood is very hard, heavy, tough, and elastic, and is used for vehicles, implements, and boat ribs. The tree prefers moist soil and will endure much rain, but is also quite drought resistant. It has endured a minimum temperature of 23° F. in southern Florida. (Adapted from *Zon and Briscoe, Eucalypts in Florida, Forest Service Bulletin No. 87, p. 44.*)

48988. EUCALYPTUS DIVERSICOLOR F. Muell. Myrtaceæ. Karri gum.

A tall tree, up to 350 feet in height, native of western Australia, straight in habit and a fairly rapid grower. The very dense and elastic wood is considered superior timber, being used by wheelwrights and

48982 to 49002—Continued.

for shipbuilding. In Florida this tree does best near the coast on granite soils; it prefers a moist climate and is quite frost resistant, but it does not endure a dry heat. (Adapted from *Zon and Briscoe, Eucalypts in Florida, Forest Service Bulletin No. 87, p. 44.*)

48989. EUCALYPTUS GOMPHOCEPHALA DC. Myrtaceæ. Tooart.

A large, symmetrical Australian tree of fairly rapid growth, reaching a height of 100 to 120 feet. The wood is very heavy, tough, and strong and is difficult to split. It is used for shipbuilding, bridges, and docks. The tree will endure but little frost and prefers limestone soils. (Adapted from *Zon and Briscoe, Eucalypts in Florida, Forest Service Bulletin No. 87, p. 44.*)

48990. EUCALYPTUS MACROCARPA Hook. Myrtaceæ.

A stout shrub or small tree, 6 to 15 feet in height, with very thick, rigid leaves 6 inches or more in length, and very large, solitary, orange to crimson flowers. It is a native of western Australia, and is chiefly valuable because of the ornamental character of its glaucous foliage and brilliant bloom. (Adapted from *Bentham, Flora Australiensis, vol. 3, p. 224*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1153.*)

48991. EUCALYPTUS MARGINATA J. E. Smith. Myrtaceæ. Jarrah.

A very large, tall, slender Australian tree, often clear of branches for two-thirds of its height. The hard, very durable wood is used for timber, piles, and railway ties. The tree will grow in a great variety of soils, but prefers moist, well-drained situations. (Adapted from *Zon and Briscoe, Eucalypts in Florida, Forest Service Bulletin No. 87, p. 44.*)

48992. EUCALYPTUS MEGACARPA F. Muell. Myrtaceæ. Blue gum.

A tall tree, native to western Australia, with smooth, grayish white bark and thick, smooth, lanceolate leaves up to 6 inches in length. The thick, hard fruits are depressed-globular and about an inch in diameter. (Adapted from *Bentham, Flora Australiensis, vol. 3, p. 232*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1156.*)

48993. EUCALYPTUS OCCIDENTALIS Endl. Myrtaceæ. Brown mallet.

A spreading shrub or medium-sized tree, native to southwestern Australia, with lanceolate leaves up to 5 inches in length. The stamens are yellowish or orange, and the fruits are bell-shaped with a spreading rim. The timber is hard, strong, and durable and is much used for posts, fence rails, etc. (Adapted from *Maiden, Useful Native Plants of Australia, p. 499*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1154.*)

48994. EUCALYPTUS OLEOSA F. Muell. Myrtaceæ.

A shrub or small tree with thick, smooth, mostly lanceolate leaves less than 4 inches long. From the foliage of this Australian tree is obtained a yellowish oil with a pleasant mintlike or camphoraceous odor. Baron von Mueller found that 100 pounds of this foliage (of which perhaps half the weight consisted of branchlets) yielded 62½ ounces of oil of 0.911 specific gravity at 70° F., boiling at 341° F. (Adapted from *Maiden, Useful Native Plants of Australia, p. 272*, and from *Bentham, Flora Australiensis, vol. 3, p. 248.*)

48982 to 49002—Continued.

48995. *EUCALYPTUS PATENS* Benth. Myrtaceæ.

Blackbutt.

This eucalypt is found in southwestern Australia, where it attains a height of 100 feet and a diameter up to 6 feet. The durable, tough timber is used by wheelwrights, and is said not to split. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 501.)

48996 and 48997. *EUCALYPTUS PYRIFORMIS* Turcz. Myrtaceæ.

A shrub or small tree, found in western and southern Australia, where it attains a height of 8 to 12 feet. The very thick narrow leaves are rarely more than 3 inches long, and the large flowers are red when fresh. The yellowish white timber is hard, heavy, and durable. (Adapted from *Bentham, Flora Australiensis*, vol. 3, p. 226, and from *Maiden, Useful Native Plants of Australia*, p. 507.)

48996. "Yellow Mallet." (Field.) 48997. "Red Mallet." (Field.)

48998. *EUCALYPTUS REDUNCA* Schauer. Myrtaceæ.

Wandoo gum.

This tree, which reaches a height of 120 feet in western Australia, where it is native, furnishes a pale, hard, particularly tough and durable timber, much prized for building purposes, various implements, etc. The seasoned wood weighs about 70 pounds per cubic foot. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 508.)

48999. *EUCALYPTUS SALMONOPHLOIA* F. Muell. Myrtaceæ. Salmon gum.

An Australian tree with shining green leaves which have numerous oil dots; the slender-stalked umbels of flowers are solitary. It is a smooth-barked species and is considered promising for dry interior valleys of the southwestern United States. (Adapted from *McClatchie, Eucalypts Cultivated in the United States, Bureau of Forestry Bulletin No. 35*, p. 96.)

49000. *EUCALYPTUS SALUBRIS* F. Muell. Myrtaceæ.

Gimlet wood.

A tree with smooth shining bark and thin, dark-green leaves with numerous oil dots. The timber is valuable, and the leaves are rich in oil. It is a native of Australia, endures high temperatures and considerable frost, and is considered promising for desert regions in the United States. (Adapted from *McClatchie, Eucalypts Cultivated in the United States, Bureau of Forestry Bulletin No. 35*, p. 98.)

49001. *EUCALYPTUS TETRAPTERA* Turcz. Myrtaceæ.

A shrub or small tree, native to western Australia, with very thick and rigid narrow leaves which occasionally become 10 inches in length. The tree is very ornamental because of the foliage and because of the fact that just before the lid falls off the fruit the calyx tube and the stalk become a brilliant crimson. (Adapted from *Bentham, Flora Australiensis*, vol. 3, p. 228, and from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 1154.)

49002. *STERCULIA DIVERSIFOLIA* Don. Sterculiaceæ.

Kurrajong.

This exceedingly fine ornamental evergreen tree occurs over a great part of New South Wales from the vicinity of the coast to far inland. Its shining-green leaves, from 2 to 6 inches long, are variable in shape, some being deeply lobed and some entire. The nearly ovoid fruit, up to 3 inches long, contains about 20 seeds, which, when ground, form an excellent substitute for coffee. On the dry lands in the interior in adverse seasons the leaves of the kurrajong are fed to stock, and cattle-

48982 to 49002—Continued.

and sheep are very fond of this fodder. The tree is easily grown from seeds. (Adapted from *The Pastoral Finance Association Magazine*, Sydney, New South Wales, vol. 5, p. 32.)

49003. PENNISETUM LATIFOLIUM Spreng. Poaceæ. Grass.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received December 16, 1919.

"An ornamental and forage grass from the Algiers Botanic Garden; obtained November, 1919." (*Trabut.*)

A tall perennial, quick-growing, nutritious grass, native to Argentina, forming large tufts and readily spreading from the roots and seeds. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 364.)

49004. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ.

(*P. juliflora* DC.)

Algaroba.

From Honolulu, Hawaii. Presented by Mr. J. M. Westgate, agronomist in charge, Hawaii Agricultural Experiment Station. Received December 20, 1919.

This tree is one of the most valuable that has been introduced into the Hawaiian Archipelago, where it flourishes at an altitude between 800 and 1,000 feet and often forms thick forest belts. In addition to being one of the best sources of honey, the pods and seeds of the algaroba are valuable for cattle and poultry, the quantity consumed in this way each year being estimated at 500,000 sacks. It is stated that the seeds might be more digestible if they were crushed, but to accomplish this they must either be soaked in water or special crushers must be used. They can be kept in perfectly good condition for six to eight months; their market value is between \$7.50 and \$10 per ton. (Adapted from *Journal d'Agriculture Tropicale*, No. 113, p. 351.)

For previous introduction, see S. P. I. No. 46973.

49005. BARLERIA CRISTATA L. Acanthaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received December 22, 1919.

A small, elegant shrub, found throughout India, with showy, blue, funnel-shaped flowers. It is often grown in gardens and is useful as a hedge plant. (Adapted from *Watt, Dictionary of the Economic Plants of India*, vol. 1, p. 399.)

49006 to 49015.

From Medellin, Colombia. Presented by Mr. W. O. Wolcott. Received December 23, 1919. Quoted notes by Mr. Wolcott.

49006. ANNONA MURICATA L. Annonaceæ.

Soursop.

"Seed taken from a fruit that measured 19 inches in length and 13 inches in diameter and weighed 23 pounds. The outside was covered with hooked spines, 1 to 1½ inch long. The whole fruit had no rust or blemish, such as is usually found on fruits weighing from 6 to 10 pounds. I have never seen one like this before."

For previous introduction, see S. P. I. No. 45933.

49007. ANNONA RETICULATA L. Annonaceæ.

Custard-apple.

"Marmon seeds."

For previous introduction, see S. P. I. No. 45955.

49006 to 49015—Continued.

49008. *ANNONA SQUAMOSA* L. Annonaceæ. Sugar-apple.

"*Guanabana* seeds."

For previous introduction, see S. P. I. No. 47875.

49009. *CARICA PAPAYA* L. Papayaceæ. Papaya.

"*Papaya* seed."

For previous introduction, see S. P. I. No. 47586.

49010. *CITRUS NOBILIS DELICIOSA* (Ten.) Swingle. Rutaceæ. Mandarin orange.

The so-called Mandarin orange, said to have been introduced from China into England in 1805 by Mr. Barrow and now grown in all warmer parts of the globe, is undoubtedly a native Chinese species, probably improved by selection through centuries of cultivation. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 143.)

For previous introduction, see S. P. I. No. 45933.

49011. *CUCURBITA FICIFOLIA* Bouche. Cucurbitaceæ. Alcallota.

"*Oyama* (green pumpkin) seed."

For previous introduction, see S. P. I. No. 42970.

49012. *CUCURBITA MAXIMA* Duchesne. Cucurbitaceæ. Squash.

"Seed of 3-foot yellow *ayama* (pumpkin squash)."

49013. *HELIANTHUS ANNUUS* L. Asteraceæ. Sunflower.

"Seed of a 16-inch sunflower."

49014. *HYLOCEREUS POLYRHIZUS* (Weber) Britt. and Rose. Cactaceæ.

"Seed from a light-red fruit with blood-red pulp of pleasing taste. This fruit weighed 18 ounces, but they often grow to a weight of 1½ to 2 pounds. The stalk is long and straggly, and three-fourths of an inch in diameter."

A slender vine, normally 3-angled, at first green or purplish but soon becoming white and afterwards green again; the ribs or wings are comparatively thin, although in age becoming more turgid. The vine bears two to four rather stout brownish spines and strongly fragrant flowers, purple in the bud, the outer perianth segments later reddish, the inner nearly white; the ovary is covered with red or deep-purple margined scales which later are entirely red. (Adapted from a note by Dr. J. N. Rose.)

49015. *PASSIFLORA QUADRANGULARIS* L. Passifloraceæ. Granadilla.

"Seeds from a fine *badca* fruit, from 10 to 12 inches long and 4 to 6 inches in diameter, similar in appearance to a big ripe cucumber, but twice as thick. The pulp is fine to eat with a spoon; the rind is very thick (half an inch or more), and might be used for making preserves or sweet pickles. The vine is very long and thick and should be trained on a fence or trellis, or even up a tree."

For previous introduction, see S. P. I. No. 45016.

49016. *PASPALUM PLICATULUM* Michx. Poaceæ. Black-grass.

From Bogota, Colombia. Collected by Mr. M. T. Dawe. Received December 24, 1919.

"A pasture grass indigenous to and now cultivated to some extent on the Llanos of San Martin and known as *black-grass* (*pasto negro*). (Dawe.)

49017 to 49019.

From Auckland, New Zealand. Purchased from E. C. Pilkington & Co.
Received December 24 and 27, 1919.

49017. DANTHONIA PILOSA R. Br. Poaceæ.**Grass.**

An excellent pasture grass which, like others of the genus, seeds freely and gives good feed in early spring. Native to southern Australia. (Adapted from *Bailey, Queensland Flora*, p. 1891.)

For previous introduction, see S. P. I. No. 31496.

49018. DANTHONIA SEMIANNULARIS (Labill.) R. Br. Poaceæ.**Grass.**

Spreading through the pastures, this native species, known as *Wallaby grass*, is becoming very popular, and rightly so, too. It is a perennial tufted grass, producing fair crops of succulent soft fodder, suitable for either sheep or cattle. The leaves are narrow, usually hairy, and light green. The flower stems grow to a height of 2 to 2½ feet; the seed, which sheds easily, is produced in clusters that have a woolly white appearance when ripe. *Wallaby grass* provides good feed during the spring and summer and remains green in the winter months. (Adapted from *The Agricultural Gazette of New South Wales*, vol. 28, p. 286.)

49019. MICROLAENA STIPOIDES (Labill.) R. Br. Poaceæ.**Meadow rice-grass.**

A slender perennial grass plentiful in lowland districts of Australia and New Zealand, chiefly near the sea. It is a most valuable pasture and lawn grass, deserving of far more attention than has hitherto been given to it. (Adapted from *Cheeseman, Manual of the New Zealand Flora*, p. 852.)

For previous introduction, see S. P. I. No. 44802.

49020. COLOCASIA ESCULENTA (L.) Schott. Araceæ.**Taro.**

From Kaying, Kwangtung, China. Tubers presented by Rev. J. H. Giffin, American Baptist Academy. Received December 26, 1919.

"*Penang*. Here in Kaying the *Penang* taro is considered delicious, but it does not grow large. The corm of the *Penang* taro is usually larger than that of other kinds, but the small tubers are smaller than those of other kinds. There are also fewer tubers; that is, a *Penang* corm has usually not more than four small tubers, while other varieties have many." (*Griffin*.)

"The *Penang* taro is considered to be the finest flavored of all the known varieties of this important food crop. It is distinguished from other taros by the purple fibers which traverse the white flesh and by a characteristic delicious fragrance which develops during cooking. The *Penang* differs also from the *Trinidad* dasheen and many other varieties of taro in that the corm, when grown under favorable conditions, is distinctly elongated instead of being roundish or oval. Unlike the *Trinidad* dasheen and similar varieties, the *Penang* taro produces usually not more than two or three cormels, or lateral 'tubers,' of marketable size; the crop therefore consists mainly of corms, which range from one to eight pounds or more each in weight. Unfortunately, this delicious taro is a rather poor keeper as compared with varieties of the dasheen type. Corms and cormels are acrid in the raw state.

"The meaning of the name *Penang* as applied to this taro is uncertain, but the Chinese character from which it is derived is said to be the same as that for 'betel nut.' Other renderings of the name are *Pat-long*, *Paan-long*, and *Banlung*." (*R. A. Young*.)

49021. CAPSICUM ANNUM L. Solanaceæ.**Red pepper.**

From Barcelona, Spain. Purchased from Hijos de Nonell through Mr. C. B. Hurst, American consul general. Received December 27, 1919.

"Spanish sweet pepper, known as *pimiento dulce morrón muy grande*. The seed is to be sown from February to June. The first sowing should be in a hothouse or in a sheltered place." (*Nonell*.)

49022. BARLERIA STRIGOSA Willd. Acanthaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received December 29, 1919.

A small, unarmed shrub, 2 to 4 feet in height, much cultivated in India and the Malay Peninsula, and native to northeastern India. The large, ovate leaves and dense, almost globose spikes of blue flowers make this a very showy garden plant. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 489.)

Received as *Barleria caerulea*, a later name for this species. For previous introduction, see S. P. I. No. 47834.

49023. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ.*(P. juliflora DC.)***Algaroba.**

From Puerto Cabello, Venezuela. Presented by Mr. George R. Phelan, American vice consul. Received December 30, 1919.

"The trees producing these pods, known by the name of *Cuji*, grow extensively in this region." (*Phelan*.)

For previous introduction, see S. P. I. No. 46972.

49024. BRASSICA OLERACEA VIRIDIS L. Brassicaceæ.**Jersey tree-kale.**

From St. John, Jersey, Channel Islands. Presented by Mr. D. R. Bisson. Received December 30, 1919.

"This plant is found very useful here as food for chickens, rabbits, and pigs, as the leaves can be stripped off continually and the plant keeps growing. In Jersey the stalks of this plant have been known to attain a height of 18 feet and when dried are turned into light and strong walking sticks. The young sprouts in early spring form a very acceptable vegetable for the table." (*Bisson*.)

For previous introduction, see S. P. I. No. 46475.

49025 and 49026.

From St. Jean-le-Blanc, Loiret, France. Presented by Edmond Versin. Received December 30, 1919.

49025. ALBIZZIA LOPHANTHA (Willd.) Benth. Mimosaceæ.

Variety *Neumanniana*. A tall shrub or small tree with velvety pubescent branches and stems, and compound leaves composed of 8 to 10 pairs of pinnae and 20 to 30 pairs of pinnules. The flowers are in loose, cylindrical, axillary spikes up to 3 inches in length, and the pods are very flat and often more than 3 inches long. Cattle are fond of browsing on the leaves of this tree, which is of rapid growth. The bark contains about 8 per cent of tannin, and the dry root contains about 10 per cent of saponin. (Adapted from *Bentham, Flora Australiensis*, vol. 2, p. 421, and from *Maiden, Useful Native Plants of Australia*, p. 116.)

For previous introduction, see S. P. I. No. 44957.

49025 and 49026—Continued.**49026. PASSIFLORA GRACILIS** Jacq. Passifloraceæ.

A Brazilian granadilla of climbing habit and with smooth slender stems. The 3-lobed, membranous leaves are up to 3 inches long and as wide. The apetalous flowers, about 2 inches in diameter, are borne singly in the axils, and the ovoid, purplish fruits are about 2 inches in length. Adapted from *Martius, Flora Brasiliensis, vol. 13, p. 578.*)

49027. LESPEDEZA STIPULACEA Maxim. Fabaceæ.

From Seoul, Chosen (Korea). Presented by Mr. Ralph G. Mills, Research Department, Severance Union Medical College. Received December 30, 1919.

"This plant seemed to me peculiar in that it was able to grow clear down to the water's edge along the coast where the salt content of the soil must have been considerable. The extent of the growth and the nearness to the high-water mark made me wonder whether this particular strain might be of use in some of our Western States where the alkali or saline content of the soil is trying to most forms of plant life." (*Mills.*)

49028 and 49029.

From Puerto Varas, Chile. Presented by Dr. E. W. D. Holway. Received December 30, 1919.

49028. HIPPEASTRUM sp. Amaryllidaceæ.

"Seeds of a *Hippeastrum* about 2 feet tall, with brilliant crimson flowers, growing on the hills near the sea." (*Holway.*)

49029. SOPHORA TETRAPTERA J. Miller. Fabaceæ.

(*Edwardsia tetraptera* Poir.)

A small tree with exceedingly hard and durable wood. The trunk may attain a diameter of 3 feet. Native to New Zealand, Lord Howe's Island, and also to Juan Fernandez Island, Chile, and Patagonia, where it is called *pelu*. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 512.*)

For previous introduction, see S. P. I. No. 44413.

49030. STADMANNIA OPPOSITIFOLIA Lam. Sapindaceæ.

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received December 30, 1919.

"The fruits make an excellent jelly, very much like that of the quince." (*Regnard.*)

A large hardwood tree, once frequent in the primeval forests of the island of Mauritius but now becoming scarce. It has alternate, pinnate leaves, dense panicles of inconspicuous flowers, and hard spherical fruits nearly an inch in diameter. (Adapted from *Baker, Flora of Mauritius, p. 60.*)

For previous introductions, see S. P. I. No. 45663.

49031. PETREA ARBOREA H. B. K. Verbenaceæ.

From Bucaranga, Colombia. Seeds purchased from Dr. Enrique Lopez. Received December 31, 1919.

"Seed of a valuable ornamental shrub from the Cordillera de los Andes, known as *miraya*, suitable for parks and gardens. The glossy dark-green leaves are long, slender, and leathery; and the dense globose crown of foliage

is profusely ornamented with long pendent racemes of purple flowers. The small corolla is intensely colored and looks like a violet in the center of the paler lavender of the showy, star-shaped calyx." (*Lopez.*)

49032 to 49050.

From Rochester, N. Y. Collected by Mr. H. E. Allanson and through the courtesy of Mr. Dunbar, of the city parks of Rochester, presented to this office for distribution. Numbered December 31, 1919.

49032. COTONEASTER ZABELI C. Schneid. Malaceæ.

This is the common cotoneaster of the thickets in western Hupeh, China, where it forms a bush up to 8 feet in height, with oval elliptic leaves, pink flowers, and red fruits. (Adapted from *Sargent, Plantæ Wilsonianæ*, vol. 1, p. 166.)

For previous introduction, see S. P. I. No. 45707.

49033 and 49034. JUGLANS RUPESTRIS Engelm. Juglandaceæ. Walnut.

A tree about 50 feet in height, with a short trunk sometimes 5 feet thick and dark yellow-green pinnate leaves 7 to 15 inches in length. The nuts are nearly globose, dark reddish brown to black, and up to 1½ inches in diameter. This walnut is distributed throughout central and western Texas, Arizona, and northern Mexico. (Adapted from *Sargent, Manual of the Trees of North America*, p. 129.)

49033. Ordinary form.

49034. Form with large nuts.

49035. × MALUS DAWSONIANA Rehder. Malaceæ.

Apple.

A tree with ascending or spreading branches, reddish brown bark, clusters of very small white flowers, and yellow or greenish yellow fruits which are pulpy and acid when ripe. This species is interesting as the first known hybrid of *M. fusca*. (Adapted from *Sargent, Trees and Shrubs*, vol. 2, p. 23.)

49036. MALUS GLAUDESCENS Rehder. Malaceæ.

Apple.

(*Pyrus glaucescens* Bailey.)

An arborescent shrub or small tree, with a slender trunk and spreading branches. The leaves are bronze in color when they unfold, becoming yellowish green and turning in autumn to a dull yellow or dark purple. The white or pink flowers, up to 4 cm. in diameter, are borne in umbellike racemes, and the fragrant yellow fruits are from 3 to 4 cm. in diameter. This tree is native to the eastern United States. (Adapted from *Sargent, Trees and Shrubs*, vol. 2, p. 139.)

For previous introduction, see S. P. I. No. 42760.

49037. MALUS NIEDZWETSKYANA Dieck. Malaceæ.

Apple.

(*Pyrus niedzwetskyana* Hemsl.)

A small tree, with dark bark and twigs, purple leaves, and dark purplish red flowers and fruit, even the flesh of the fruit being purple. It is native to Turkestan. (Adapted from *Bulletin of Popular Information* No. 39, *Arnold Arboretum*.)

49038. MALUS PRUNIFOLIA (Willd.) Borkh. Malaceæ.

Apple.

(*Pyrus prunifolia* Willd.)

"For years this was considered a hybrid between *Pyrus baccata* and *P. malus* or other species, but it is now considered by Rehder to be a good species, as yet known only in cultivation, although supposed to

49032 to 49050—Continued.

come from Siberia. It has sessile clusters of white flowers and green, yellow, and red fruits about an inch in diameter." (*Bailey*.)

For previous introduction, see S. P. I. No. 37617.

49039. MALUS SIEBOLDII (Regel) Rehder. Malaceæ. **Apple.**
(*Pyrus sieboldii* Regel.)

A low shrub, broader than high, with arching stems. It has the merit of flowering later than other Asiatic crab apples. It produces great quantities of fruits about the size of peas; these vary in color from bright red to yellow. (Adapted from *Bulletin of Popular Information, Arnold Arboretum, vol. 4, p. 47.*)

For previous introduction, see S. P. I. No. 27128.

49040. POPULUS ADENOPODA Maxim. Salicaceæ. **Poplar.**

A rather slender, shapely tree, 25 meters or more tall, with a straight trunk and smooth pale-gray bark which on old trees becomes dark and slightly fissured. The leaves are greenish beneath. This is the common low-level poplar of Hupeh and Szechwan, China. (Adapted from *Sargent, Plantae Wilsonianae, vol. 3, p. 21.*)

49041. POPULUS MAXIMOWICZII A. Henry. Salicaceæ. **Poplar.**

This poplar is a native of eastern Siberia and northern Japan. It is the largest tree of eastern Siberia, where it sometimes attains a height of 80 feet, with a broad head of massive branches. The leaves are finely toothed, pale green and lustrous above, silvery white below, and 3 or 4 inches long. (Adapted from *Bulletin of Popular Information, Arnold Arboretum, vol. 1, p. 41.*)

For previous introduction, see S. P. I. No. 43862.

49042. PYRUS MALIFOLIA Spach. Malaceæ. **Pear.**

"This may be a hybrid between *Pyrus auricularis* and some other species of *Pyrus* (*Malus*), but this has not yet been determined." (*Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 995.*)

For previous introduction, see S. P. I. No. 44048.

49043. ROSA MICRANTHA J. E. Smith. Rosaceæ. **Rose.**

A rose which closely resembles *Rosa canina*; it is native to the mountains of central Europe. The leaflets are often tinged with red, and the pink flowers are borne in corymbs. The ovoid fruits are bright red. (Adapted from *Willmott, The Genus Rosa, p. 461.*)

49044. ROSA PALUSTRIS Marsh. Rosaceæ. **Rose.**
(*R. carolina* of Auth., not L.)

Variety *nuttalliana*. "Flowers larger and appearing later than in the species, lasting until September." (*Alfred Rehder.*)

The typical form of this species is an erect, very tall shrub, distributed through eastern North America from Canada to Florida. It has reddish stems, bright-pink single flowers which appear very late, and bright-scarlet fruit. (Adapted from *Willmott, The Genus Rosa, pt. 11, p. 211.*)

49045. ROSA sp. Rosaceæ. **Rose.**
"No. 1135."

49046. ROSA sp. Rosaceæ. **Rose.**
"No. 1136."

49032 to 49050—Continued.

49047. *ROSA* sp. Rosaceæ. Rose.
 "No. 1140."
 49048. *ROSA* sp. Rosaceæ. Rose.
 Variety *Catherine*.
 49049. *ROSA* sp. Rosaceæ. Rose.
 "A *Rosa multiflora* hybrid." (*Alfred Rehder*.)
 49050. *ULMUS* sp. Ulmaceæ. Elm.
 "Dwarf form."

49051 to 49123.

From Jamaica Plain, Mass. Plant material collected by Mr. H. E. Allanson in the Arnold Arboretum through the courtesy of Prof. Sargent, its director. Numbered December 31, 1919. Quoted notes by Mr. Allanson.

49051. *AESCULUS TURBINATA* Blume. Æsculaceæ.

The hardy Chinese *Aesculus*, "Tochnoki," which attains a height of 40 feet. It is valuable as a shade tree. The seeds are used for food in Japan. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 22.)

49052. *BERBERIS AMURENSIS* Rupr. Berberidaceæ. Barberry.

A very decorative ornamental with branches covered with drooping clusters of showy red fruits. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, No. 35, Oct. 25, 1912.)

49053. *BERBERIS AMURENSIS JAPONICA* (Regal) Rehder. Berberidaceæ. Barberry.
 (*B. sieboldii* Hort., not Miquel.)

A stout compact shrub, indigenous to Japan, 3 to 4 feet in height, with pale-gray bark and dark-green, leathery, obovate leaves which turn in autumn to brilliant shades of scarlet and orange. The racemes of greenish yellow flowers and the scarlet berries resemble those of the common barberry. (Adapted from *Garden and Forest*, vol. 3, p. 248.)

49054. *BERBERIS BRETSCHNEIDERI* Rehder. Berberidaceæ. Barberry.

An upright fast-growing shrub, 2 to 3 meters in height, found in the mountains near Peking, China. The small, pale-yellow flowers are borne in pendent racemes and are succeeded by racemes of purplish pear-shaped fruits. This shrub is hardy as far north as Massachusetts and is particularly ornamental in late autumn when the leaves change to brilliant shades of orange and scarlet. (Adapted from *Sargent, Trees and Shrubs*, vol. 2, p. 21, pl. 110.)

49055. *BERBERIS CANADENSIS* Mill. Berberidaceæ. Barberry.

An ornamental of great decorative value. Its showy fruits are very ornamental in the house. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, No. 35, Nov. 7, 1912.)

49056. *BERBERIS DICTYOPHYLLA* Franch. Berberidaceæ. Barberry.

This barberry was introduced from Yunnan many years ago, but it is not common nor grown to the extent it deserves. It forms a medium-sized shrub some 4 feet or so in height and is somewhat broad in proportion. The branches are erect when young, but become semiarching with age. The ovate leaves are borne in clusters of five at each node, each leaf being about half an inch long and having a few irregular teeth on the

49051 to 49123—Continued.

edges. They are bright grass-green above and intensely glaucous beneath. This glaucescence is also present on the stems, more especially the younger ones, the blue-whiteness of the whole plant being especially striking in summer. The usual three spines found in most of the barberries are present beneath the leaves at each node, each spine being somewhat less than one inch in length and sharply pointed. The flowers are small, pale yellow in color, and are succeeded by oval berries which are red when ripe. Neither the flowers nor the fruits are very striking, the chief beauty of the plant being the peculiar glaucescence of the stems and the under sides of the leaves. It is easily propagated by seeds or by layering. (Adapted from *The Gardeners' Chronicle*, Sept. 28, 1912.)

49057. BERBERIS DIELSIANA Fedde. Berberidaceæ. **Barberry.**

A spreading loosely branched shrub, $1\frac{1}{2}$ to 3 meters (5 to 10 feet) tall, with narrowly elliptic, acute leaves which are distinctly whitish underneath, yellow flowers, and red fruits. The foliage is often bronzy. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, pt. 3, p. 441.)

49058. BERBERIS GILGIANA Fedde. Berberidaceæ. **Barberry.**

An ashy-barked ornamental shrub, native to central China. The lanceolate or obovate leaves are somewhat coriaceous and up to 4 cm. long. The flowers are borne in dense racemes. (Adapted from *Engler's Botanische Jahrbücher*, vol. 36, Beiblatt No. 82, p. 43.)

49059. BERBERIS HENRYANA C. Schneid. Berberidaceæ. **Barberry.**

This barberry represents apparently *Berberis vulgaris* in Hupeh and eastern Szechwan, but it is very different from the European species and its nearest relatives, especially in its brownish, sometimes almost purplish branches which are yellowish gray in *B. vulgaris* L. and *B. amurensis* Rupr. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, pt. 3, p. 440.)

49060. BERBERIS INTEGERRIMA Bunge. Berberidaceæ. **Barberry.**

A shrub up to 6 feet in height, with grayish green leaves, dense racemes of small flowers, and black fruits. It flowers in May. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 1, p. 490.)

49061. BERBERIS KOREANA Palibin. Berberidaceæ. **Barberry.**

An ornamental shrub, up to 6 feet in height, with the young branches shining purplish, short simple spines, oval or obovate leaves up to $2\frac{1}{2}$ inches long, and dense lax racemes of yellow flowers. The roundish fruits are scarlet. This shrub is a native of Chosen (Korea). (Adapted from *Palibin, Conspectus Florae Korae*, p. 22, and from *Bailey, Standard Cyclopedia of Horticulture*, vol. 1, p. 490.)

49062. BERBERIS LUCIDA Schrad. Berberidaceæ. **Barberry.**

This barberry resembles in general habit *Berberis vulgaris*. It has oblong-elliptical spiny-toothed leaves and spreading racemes of elliptical red berries. It is said to be a native of the Iberian Peninsula. (Adapted from *Linnaea*, vol. 12, p. 363.)

49063. BERBERIS REHDERIANA C. Schneid. Berberidaceæ. **Barberry.**

This *Berberis* is supposed to be a native of Japan; it is a shrub with weak spines, oblanceolate or ovate-oblong leaves about 2 cm. in length, racemes of small yellow flowers, and yellowish red globose fruits. (Adapted from *Bulletin l'Herbier Boissier*, 2d ser. vol. 5, p. 659.)

49051 to 49123—Continued.

49064. *BERBERIS SEROTINA* Lange. Berberidaceæ. **Barberry.**

A form said by C. Schneider to be closely related to *B. sinensis* Poir.

49065. *BERBERIS THUNBERGII MAXIMOWICZII* Regel. Berberidaceæ. **Barberry.**

A plant larger than the type, with arching stems, larger leaves, and larger flowers and fruits. In the autumn the color of the leaves is as beautiful as those of *B. thunbergii*. (Adapted from *Bulletin of Popular Information, Arnold Arboretum, No. 33.*)

49066 and 49067. *BERBERIS VULGARIS* L. Berberidaceæ. **Barberry.**

49066. Variety *purpurea*. 49067. European garden variety.

49068. *BERBERIS* sp. Berberidaceæ. **Barberry.**

Received as *B. ottawensis*, which has not yet been published.

49069. *BERBERIS* sp. Berberidaceæ. **Barberry.**

Received at *B. ottawensis*, which has not yet been published.

49070. *BERBERIS* sp. Berberidaceæ. **Barberry.**

Received as *B. wilsonae stapfiana*, which has not yet been published.

49071. × *CRATAEGUS CARRIEREI* Bean. Malaceæ.

"(No. 41. November 17, 1919.) Beautiful tree, leaves rich green to brown and red; large scarlet fruits."

A hybrid hawthorn which originated in France and which is one of the most attractive members of this genus. The identity of the parents does not seem to be very clear. M. Carriers described it as a seedling of *Crataegus mexicana*; the other parent may be *C. crus-galli*. *C. punctata* is also mentioned as one of the parents. The glistening white flowers are nearly an inch in diameter, with attractive pink stamens, borne in flattish corymbs in May and June. During the autumn the orange-red fruits, three-fourths of an inch in diameter, make the tree very attractive. (Adapted from *The Garden, vol. 78, p. 64.*)

For previous introduction, see S. P. I. No. 35095.

49072. *CRATAEGUS DAWSONIANA* Sarg. Malaceæ.

"(No. 39. November 21, 1919.) Beautiful tree; large, crop of pink berries."

A small tree with spreading branches forming an irregular crown. It has dark yellow-green, oval, acuminate leaves, many-flowered corymbs, and usually orange-red, yellow-fleshed obovate fruits which are borne on long, slender, red pedicels. The tree is a native of Illinois. (Adapted from *Report of the Missouri Botanical Garden, p. 88, 1908.*)

49073. *CRATAEGUS NITIDA* (Engelm.) Sarg. Malaceæ.

"(No. 40. November 11, 1919.) Beautiful, deep-red fruit; leaves all gone."

A tall, straight tree, about 30 feet high, common on the bottom lands of the Mississippi River in Illinois. The leaves turn to brilliant shades in autumn, and the flowers are borne in broad compound corymbs. (Adapted from *Sargent, Manual of the Trees of North America, p. 406.*)

For previous introduction, see S. P. I. No. 44388.

49074. *CRATAEGUS* sp. Malaceæ.

"(No. 42. November 21, 1919.) Much like × *Crataegus carrieri*."

49051 to 49123—Continued.

49075. *MALUS ANGUSTIFOLIA* Michx. Malaceæ. Apple.
(*Pyrus angustifolia* Ait.)

A tree rarely 30 feet in height, with rigid branches forming a broad, open head, lanceolate-oblong leaves, very fragrant white or pink flowers borne in few-flowered clusters, and very fragrant, pale yellow-green fruits about an inch in diameter. The tree is common in the southeastern United States. (Adapted from *Sargent, Manual of the Trees of North America*, p. 352.)

49076. \times *MALUS ATROSANGUINEA* C. Schneid. Malaceæ. Apple.
(*Pyrus atrosanguinea* Hort.)

A handsome floriferous species of doubtful origin. It is probably *Pyrus halliana* \times *P. sieboldii*, and resembles it in general but differs in that its deep carmine flowers do not fade to white, in its rather narrower petals, and in its more shining and finally glabrous leaves. The fruit is dark red. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2875.)

49077. *MALUS BACCATA* (L.) Moench. Malaceæ. Siberian crab apple.
(*Pyrus baccata* L.)

The crab apple of eastern Siberia is a tall slender tree with white flowers borne on long drooping stems, and very small yellow fruits, from which the calyx falls before the fruit is ripe. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, No. 22.)

For previous introduction, see S. P. I. No. 44283.

49078. *MALUS CORONARIA* (L.) Mill. Malaceæ. Wild crab apple.
(*Pyrus coronaria* L.)

A beautiful tree, native to the eastern United States. In May it is covered with fragrant rose-colored flowers. The fruits, about 1½ inches in diameter, are yellow-green and valued for making preserves. (Adapted from *Curtis's Botanical Magazine*, pl. 2009.)

49079. \times *MALUS DAWSONIANA* Rehder. Malaceæ. Apple.

For description, see S. P. I. No. 49035.

49080. *MALUS FLORIBUNDA* Siebold. Malaceæ. Crab apple.
(*Pyrus pulcherrima* Aschers. and Graebn.)

One of the handsomest of all the crab apples, and one of the earliest to flower. It is a broad shrub with abundant dark-green foliage and a great profusion of pink flowers. The yellow or orange fruits are not much larger than peas. The origin of this plant is uncertain, although it appears to be known in China as a wild plant. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, No. 22.)

49081. *MALUS HALLIANA* Koehne. Malaceæ. Apple.

Variety *parkmanii*. "The double-flowered form; named for Francis Parkman, the historian, in whose garden near Boston it was first grown in this country." (*L. H. Bailey*.)

49082. *MALUS MICROMALUS* Makino. Malaceæ. Apple.

This little-known species is unusually attractive with its small pink flowers. It is a tree with erect branches which form a narrow pyramidal head; the bark is pale and smooth. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, vol. 4, p. 12.)

49051 to 49123—Continued.

49083. *MALUS PRUNIFOLIA RINKI* (Koidz.) Rehder. Malaceæ. **Apple.**
(*Pyrus prunifolia rinki* Bailey.)

A very handsome tree, native to northern and western China, which produces an abundance of roundish fruits, smaller than those of the typical species and varying in color from green to yellow or red. Its handsome and abundant fruits make it well worthy of cultivation in American gardens. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, vol. 4, p. 46.)

For previous introduction, see S. P. I. No. 46700.

- 49084 and 49085. *MALUS SARGENTII* Rehder. Malaceæ. **Apple.**
(*Pyrus sargentii* Bean.)

49084. A shrub from northern Japan which grows only a few feet in height, but spreads by semiprostrate stems to a wide diameter. The scarlet fruit, which is produced in great quantities, remains in good condition on the branches until the following spring. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, vol. 4, p. 47.)

For previous introduction, see S. P. I. No. 43858.

49085. "A dwarf form."

- 49086 and 49087. *MALUS SIEBOLDII* (Regel) Rehder. Malaceæ. **Apple.**
(*Pyrus sieboldii* Regel.)

49086. For description, see S. P. I. No. 49039.

49087. Received as *Malus toringo*, which is now referred to *M. sieboldii*.

49088. *MALUS SIEBOLDII ARBORESCENS* Rehder. Malaceæ.
(*Pyrus sieboldii arborescens* Bailey.)

"A form widely distributed in Japan. It differs from the type in its more treelike habit, somewhat larger and less divided leaves, and in the color of the flowers, which are often nearly white." (L. H. Bailey.)

For previous introduction, see S. P. I. No. 43704.

49089. *MALUS SIEBOLDII CALOCARPA* Rehder. Malaceæ. **Apple.**

This variety of *M. sieboldii* has larger flowers and fruit and is a large arborescent shrub. As a flowering plant and when its bright-red, lustrous fruit is ripe, it is one of the handsomest of the crab apples. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, vol. 4, p. 47.)

49090. *MALUS SOULARDI* (Bailey) Britton. Malaceæ. **Apple.**
(*Pyrus soulardi* Bailey.)

The Soulard crab, with ovate or obovate leaves with wrinkled lower surfaces and greenish yellow fruits, is found occasionally from Minnesota to eastern Texas, and is believed to be a natural hybrid between the common apple and *M. ioensis*. (Adapted from *Sargent, Manual of the Trees of North America*, p. 355.)

49091. *MALUS SPECTABILIS* (Ait.) Borkh. Malaceæ. **Chinese flowering apple.**
(*Pyrus spectabilis* Ait.)

A tall shrub or small tree from northern China, with erect, slightly spreading branches, large pink flowers which in the cultivated forms are more or less double, and medium-sized yellow fruits. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, No. 22.)

For previous introduction, see S. P. I. No. 44281.

49051 to 49123—Continued.

49092. MALUS sp. Malaceæ. Apple.

"(No. 5009.) *Fluke* apple. Fruits."

49093. MALUS sp. Malaceæ. Apple.

"*Kashmere*. Fruits."

49094. MALUS sp. Malaceæ. Apple.

"(No. 329.) *Purdom*. Fruits."

49095. MALUS sp. Malaceæ. Apple.

"Red-fruited crab apple bought in Chinese market."

49096. MALUS sp. Malaceæ. Apple.

"Apparently a hybrid between *Malus baccata* and *M. prunifolia*." (Rehder.)

49097. PYRUS CALLERYANA Decaisne. Malaceæ. Pear.

A wild Chinese pear, not uncommon in western Hupeh at altitudes of 1,000 to 1,500 meters. It is easily recognizable by its comparatively small, crenate leaves and small flowers. This pear maintains a vigorous and healthy appearance under the most trying conditions, and might prove to be a very desirable blight-resistant stock. The woolly aphid has not been known to touch this species. (Adapted from *Monthly Bulletin of the California State Commission of Horticulture*, vol. 4, p. 313.)

For previous introduction, see S. P. I. No. 47261.

49098. PYRUS CALLERYANA GRACILIFLORA Rehder. Malaceæ. Pear.

"This form looks at flowering time quite distinct from the plants we consider typical *Pyrus calleryana* on account of its looser and slenderer inflorescence and the smaller flowers with pink, not purple, anthers." (*Journal of the Arnold Arboretum*, July, 1920, p. 61.)

49099. PYRUS CALLERYANA TOMENTELLA Rehder. Malaceæ. Pear.

"This form is readily distinguished from the type by the dense white tomentum of the young growth and of the inflorescence, which on the branchlets often persists until the following year." (*Journal of the Arnold Arboretum*, July, 1920, p. 61.)

49100. PYRUS SERRULATA Rehder. Malaceæ. Pear.

A tree, native to western China, 22 to 26 feet in height, with oval or oval-oblong, serrulate leaves up to 4½ inches in length, racemes of white flowers, and nearly globular brown fruits about half an inch long. (Adapted from Rehder, *Proceedings of the American Academy of Arts and Sciences*, vol. 50, p. 234.)

For previous introduction, see S. P. I. No. 46748.

49101. ROSA ABIETINA Grenier. Rosaceæ. Rose.

A small, hardy, pink-flowered rose from Switzerland and the French provinces nearest that country. The bush is usually from 5 to 6 feet tall. (Adapted from Schneider, *Handbuch der Laubholzkunde*, pt. 1, p. 567.)

For previous introduction, see S. P. I. No. 43706.

49102. ROSA ALBA L. Rosaceæ. Rose.

"An upright shrub, about 6 feet high, with white, more or less double fragrant flowers and ovate scarlet fruits. Its origin is unknown; it

49051 to 49123—Continued.

may possibly be a hybrid between *Rosa gallica* and *R. dumetorum*." (*Rehder*.)

For previous introduction, see S. P. I. No. 30254.

49103. ROSA ALBERTI Regel. Rosaceæ. Rose.

"Slender-branched rose from Turkestan, allied to *Rosa willmottiae*. Flowers white, 1½ inches wide." (*Rehder*.)

For previous introduction, see S. P. I. No. 37977.

49104. ROSA ARVENSIS Huds. Rosaceæ. Ayrshire rose.

This is a British species readily recognized by its long, slender, trailing stems. Popularly known as the Ayrshire rose, the habit of the plant makes it very suitable for covering banks and terraces. The white single flowers, with a tuft of yellow stamens in the center, appear during June and July, and the small oval fruits are red. (Adapted from *The Garden*, vol. 18, p. 511.)

49105. ROSA BELGRADENSIS Pancic. Rosaceæ. Rose.

"This resembles *Rosa rubiginosa* or *R. dumetorum*. It is a medium-sized shrub with rather small, slightly glandular-pubescent foliage and clustered pink flowers about 1½ inches across." (*Rehder*.)

49106. ROSA BLANDA Ait. Rosaceæ. Rose.

"(No. 10. November 14, 1919.) Forms a thicketlike growth; free seeder. No thorns."

An erect shrub, 4 to 6 feet high, found generally in damp situations from Labrador throughout the northern United States. The pink flowers, which are sweet scented, are single and rather large. It is one of the earliest roses to flower. (Adapted from *Willmott. The Genus Rosa*, pt. 16, pl. 104.)

49107 and 49108. ROSA CANINA L. Rosaceæ. Rose.

49107. "(No. 16. November 21, 1919.)" A stout shrub, 6 to 13 feet high, with scattered hooked thorns and clusters of fragrant white or pinkish flowers. The roundish fruits are bright red. This rose is found throughout most of the cooler parts of Europe and western Asia and has many varieties. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 422.)

For previous introduction, see S. P. I. No. 43709.

49108. Variety *subinermis*. "(No. 5. November 14, 1919.) Small plant, sparse seeder."

49109. ROSA CAROLINA L. Rosaceæ. Rose.

"(No. 1. November 14, 1919.) Eastern North America. Spreading bush, about 3 or 4 feet high, very much covered with thorns. Fair quantity of small red round hips."

49110. ROSA CORIIFOLIA Fries. Rosaceæ. Rose.

"(No. 14. November 14, 1919.) Large bush, heavily fruited."

This is a very attractive single white rose, common throughout Europe, extending to western Asia. The stems are erect or arching, and the flowers are borne singly or in clusters of two to four. The bright-red fruits ripen in September. (Adapted from *Willmott. The Genus Rosa*, pt. 20, pl. 129.)

For previous introduction, see S. P. I. No. 43713.

49051 to 49123—Continued.

49111. ROSA DUMETORUM Thuill. Rosaceæ. Rose.

"(No. 21. November 21, 1919.) Beautiful deep-red hips; vigorous grower."

A tall, arching shrub, generally distributed throughout England, with stout scattered prickles, pubescent leaves, few-flowered corymbs of single pink flowers, and oblong, bright-red, early-ripening fruits. (Adapted from *Willmott, The Genus Rosa, pt. 21, pl. 132.*)

49112. ROSA GAYIANA Wallr. Rosaceæ. Rose.

"(No. 26. November 21, 1919.)"

A European rose closely allied to *Rosa villosa* L., from which it appears to differ chiefly by its larger, oblong-ovate leaflets. The thorns are straight, and the flowers solitary. (Adapted from *Wallroth, Rosa Plantarum Generis Historia Succincta, p. 171.*)

For previous introduction, see S. P. I. No. 43715.

49113. ROSA HELENÆ Rehd. and Wils. Rosaceæ. Rose.

"(No. 22. November 21, 1919.)"

A vigorous and hardy shrub with slender, arching stems, 5 or 6 feet high, with cheerful light-green foliage and many-flowered clusters of pure white, fragrant flowers $1\frac{1}{2}$ inches in diameter. It is native to western China. (Adapted from *Bulletin of Popular Information, Arnold Arboretum, vol. 1, p. 39.*)

For previous introduction, see S. P. I. No. 45729.

49114. ROSA MONTANA Chaix. Rosaceæ. Rose.

"(No. 7. November 14, 1919.) Small; smooth red bark; good seeder."

"Allied to *Rosa canina*. It has hooked prickles and small, pale-pink flowers." (*Rehder.*)

49115. ROSA MULTIFLORA CATHAYENSIS Rehd. and Wils. Rosaceæ. Rose.

This is a very common rose growing in sandy and rocky places besides streams everywhere in western Hupeh and in Szechwan, from river level to an altitude of 1,300 meters. The flowers are always pink and larger than those of the type, and like the type it is a very variable plant. The stems may be prostrate or erect; the leaves vary extremely in size, and the leaflets vary from narrow-lanceolate to suborbicular and are nearly glabrous or very pubescent. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, pt. 2, p. 305.*)

49116. ROSA NUTKANA Presl. Rosaceæ. Rose.

"(No. 7. November 14, 1919.) Vigorous; much barbed."

An erect shrub, 3 to 4 feet high, with bright-brown stems and stout scattered prickles. It is found from Alaska to northern California. The flowers are large, single, and pink and the fruits red and pulpy. (Adapted from *Willmott, The Genus Rosa, pt. 12, pl. 75.*)

For previous introduction, see S. P. I. No. 30261.

49117. ROSA OXYODON Boiss. Rosaceæ. Rose.

"(No. 15. November 21, 1919.) Large spring variety."

A prickly-stemmed shrub with solitary pink flowers. It is native to eastern Caucasia. (Adapted from *Boissier, Flora Orientalis, vol. 2, p. 647.*)

For previous introduction, see S. P. I. No. 43722.

49051 to 49123—Continued.

49118 and 49119. *ROSA RUBIGINOSA* L. Rosaceæ. Sweetbrier.

49118. "(No. 3. November 14, 1919.)" An erect, compact shrub, 3 to 5 feet high, with stout, scattered, hooked prickles and 5 to 7 small, ovate, acute, dull-green leaflets that are nearly or quite glabrous above and densely glandular (scented) and slightly hairy beneath. It bears one to four bright-pink, corymbose flowers; the fruit is dark red and does not ripen until October. The sweetbrier is wild throughout Europe; it extends to Teneriffe and Persia, and is naturalized in the eastern United States. (Adapted from Willmott, *The Genus Rosa*, pt. 23, p. 449.)

49119. "(No. 11. November 14, 1919.)"

49120. *ROSA SATURATA* Baker. Rosaceæ. Rose.

"(No. 13. November 14, 1919.)"

A shrub, up to 8 feet in height, native to central China. The deep-red flowers are about 2 inches in diameter and are borne singly or in twos or threes. The obovoid fruits are coral red. (Adapted from Willmott, *The Genus Rosa*, pt. 25, p. 503.)

For previous introduction, see S. P. I. No. 43911.

49121. *ROSA SETIGERA* Michx. Rosaceæ. Prairie rose.

"(No. 27. November 14, 1919.)"

A very tall rose with arching stems, small scattered prickles, and large single pink or white flowers borne in few-flowered lax corymbs. The fruits are red. The prairie rose, as this is called, is found from Florida and Texas northward to the Great Lakes. (Adapted from Willmott, *The Genus Rosa*, pt. 4, pl. 23.)

49122. *ROSA TURKESTANICA* Regel. Rosaceæ. Rose.

"(No. 2. November 14, 1919.) Erect, tall, not many thorns. Fairly good grower; scant seeder. Oblong bright-red hips three-fourths of an inch long and three-eighths of an inch in diameter."

49123. *ROSA* sp. Rosaceæ. Rose.

"(No. 4. November 14, 1919.)"

Received as *Rosa obtusiloba*, for which a place of publication has not been found.

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